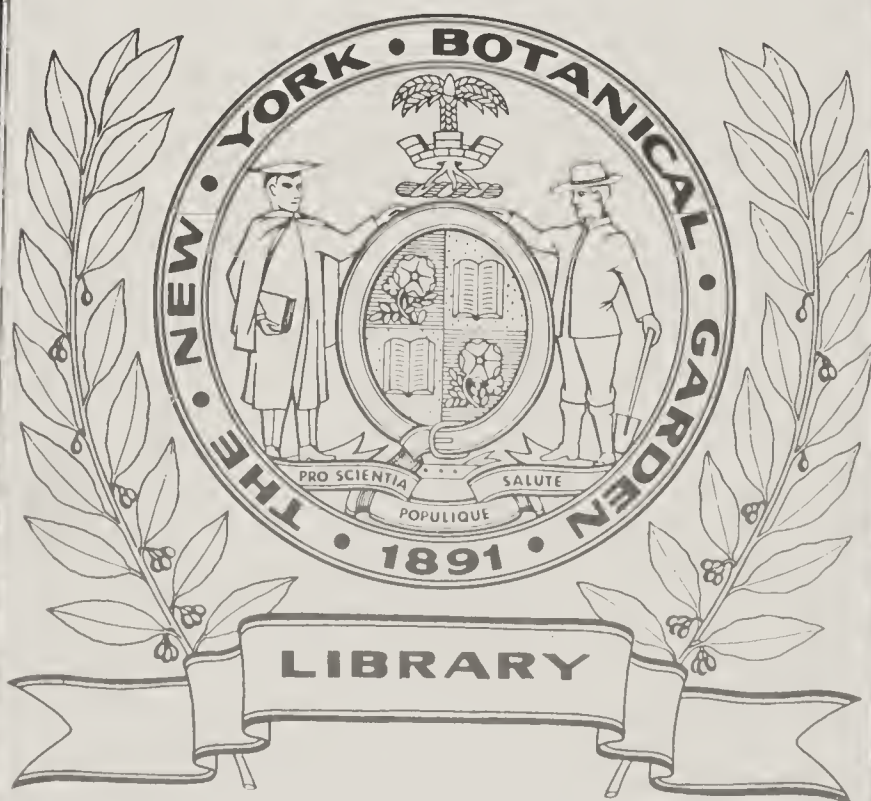


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1915-17



ARNOLD ARBORETUM

HARVARD UNIVERSITY



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OF

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ARNOLD ARBORETUM

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OF

POPULAR INFORMATION

JAMAICA PLAIN, MASS.

APRIL 28, 1915

Effects of the winter in the Arboretum. The long and unusual drought of the autumn of 1914 thoroughly ripened the wood of the young branches of deciduous-leaved trees and shrubs, and those plants which produce their flowers on the branches of the previous year promise an unusual crop of flowers. The winter has not been a severe one and there are no losses to report among deciduous-leaved plants, which suffered so severely here during the winter of 1913-14. The dry autumn followed by the unusual drought of March has injured, however, many broad-leaved evergreens, especially Rhododendrons, which have never before suffered so severely in the Arboretum, large plants of the hardiest varieties, which have been growing here for at least twenty-five years, having been killed. The Rhododendron collection is in an exceptionally sheltered and favorable position, and is planted in soil perfectly suited to these plants. They have never suffered from the greater cold of other winters, and the condition of the collection at this time shows that what injures Rhododendrons is want of moisture during the summer and autumn rather than excessive cold, and that only a small number of species and varieties can be successfully cultivated in New England. The list of the varieties which have been killed or seriously injured will appear in a later bulletin.

Native and exotic early spring flowering trees and shrubs. It is interesting to note that our gardens depend almost entirely on foreign trees and shrubs for their greatest beauty in early spring. To this general statement, however, there are a few exceptions. The ground under the Red Maples, *Acer rubrum*, is now red with their fallen flowers, while the Norway Maple (*Acer platanoides*) is just opening its

bright yellow flowers, which will make this tree conspicuous for another week. Two interesting native shrubs, too, the Spice Bush (*Benzoin aestivale*, sometimes called *Lindera Benzoin*), and the Leatherwood (*Dirca palustris*), have been covered for several days with their small bright yellow flowers which appear before or with the unfolding of the leaves. There are large groups of these plants on the right-hand side of the Bussey Hill Road, opposite the upper end of the Lilac Group. Not very often cultivated they deserve a place in every spring garden. Among early-flowering American plants is also to be mentioned the Shad Bush of the Southern states, *Amelanchier canadensis*. This is the largest and earliest flowering of the whole genus, and is often a tree of considerable size. It is now in flower on the left-hand side of the Meadow Road, entering from the Jamaica Plain Gate, where the general collection of these plants has been arranged. In another week the Arboretum will be gay with the flowers of the Shad Bushes, for these plants have been largely used in the mixed plantation along the drives. With these few exceptions, however, the shrubs which make the greatest show here in the early spring, the Magnolias, Forsythias, Cherries, Peaches, Apples, Pears, Azaleas, Honeysuckles, Lilacs and Berberis are from the Old World.

Magnolias. The earliest of the Magnolias, *M. stellata*, has been in flower for several days in front of the Administration Building. This is a perfectly hardy, vigorous, wide-spreading shrub and an inhabitant of the mountain slopes of southern Japan. Like the other early-flowering Magnolias, it belongs to that section of the genus in which the flowers appear before the leaves. There is a variety of this plant with pale pink flowers which is also in bloom. The flowers of another Japanese species, *Magnolia kobus*, and its variety *borealis*, appear soon after those of *M. stellata*. The species is a large, irregular growing shrub and is inferior in size and habit to its variety which is a tall and shapely tree with larger flowers. These plants rarely flower freely in this climate and now carry fewer flowers than they did a year ago, and as flowering plants are inferior to the Chinese species and their hybrids which are also in flower. The best known of these Chinese Magnolias is the white-flowered *M. denudata*, better known in gardens as *M. conspicua* or as *M. Yulan*. This is one of the handsomest and hardiest of the spring-flowering trees which are hardy in eastern New England, producing freely every year its large tulip-shaped blossoms which usually escape injury from late frosts, by which the flowers of *M. stellata* are often discolored. There are a number of hybrids between *M. denudata* and *M. liliflora*, usually known as *M. obovata* or as *M. purpurea*. These hybrids all have flowers more or less deeply tinged or streaked with rose and bloom a little later than *M. denudata*. *M. Soulangeana* is the best known of these hybrids, but there are several others which are equally beautiful. These plants are near the Administration Building at the Jamaica Plain entrance.

Asiatic Cherries. This is one of the most interesting weeks of the whole year in the Arboretum for several of the Chinese and Japanese Cherries are in flower. The first of these plants to open its flowers, *Prunus tomentosa*, is a native of northern and western China. It is an old inhabitant of the Arboretum, although at this time larger plants

can be seen along the Francis Parkman Road in Jamaica Plain, in the Boston Park System, than are now to be found in the Arboretum. It is a large, wide-spreading and perfectly hardy shrub; the flowers open from pink buds as the leaves begin to unfold, and the bright red flower-stalks and calyx make a charming contrast with the white petals. The small fruit ripens in June and is scarlet, slightly hairy, sweet and of good flavor. The hardiness and the ability of this shrub to flourish in a dry climate makes it valuable in cold regions like the Dakotas, and it is not impossible that it will in time be made valuable for its fruit which is as large and of as good flavor as that of the wild Cherries of Europe, from which the best garden cherries have been developed. Even more beautiful as a flowering plant is another shrub from northern China, *Prunus triloba*. This has flowers of the purest pink and is hardy and free flowering. Apparently first cultivated in the Arboretum, where seeds were received more than thirty years ago from Dr. Bretschneider, then at Peking, it has never become common in gardens, although the less desirable form with double flowers (var. *plena*) is to be found in most collections of hardy shrubs. This blooms a little later than the single-flowered plant from which it was derived long ago in China. Three Japanese Cherries are in bloom, *Prunus Sargentii*, *P. pendula*, and *P. subhirtella*. The first is believed by those who have seen the most of these plants to be the handsomest of the Cherry trees. It is a large tree with lustrous reddish bark and broad pink or rose-colored flowers which appear before the leaves; these are of good size, deep green and lustrous, and in the autumn turn to shades of crimson or yellow. The fruit ripens in June and is the size of a pea, bright red when fully grown and black and shining at maturity. This was once a common tree in the forests of northern Hondo and of Hokaido and ranging northward into Saghalin. The large specimens have now nearly all been cut for the valuable wood which this tree produces. Last year, however, Mr. Wilson found at Koganei, near Tokyo, an avenue of this tree three miles long which had been planted in 1735. Some of these trees are from sixty to seventy-five feet tall, with trunks from nine to thirteen feet round and heads thirty or fifty feet through. Several double-flowered varieties of this tree cultivated in Japan have recently been brought to the Arboretum by Mr. Wilson and promise new beauties for the spring gardens of the United States and Europe. *Prunus Sargentii* has proved in Japan the best stock on which to graft all the Japanese double-flowered Cherries, and in this country it may prove more valuable for the propagation of the European garden Cherries than the stock usually used for this purpose. The flowers, unfortunately, retain their beauty for only a short time and by the end of the week the petals will no doubt be falling. *Prunus pendula* is a better known plant in American gardens, into which it was introduced from Japan several years ago. Seedlings of this form with pendulous branches often retain this habit, but sometimes seedlings appear with more erect and spreading branches, indicating that it has probably descended from a tree of different habit. The third of these species, *Prunus subhirtella*, is rather a large shrub than a tree. The flowers, which are borne in the greatest profusion, are similar to those of *P. pendula*, but the branches are erect. This when in flower is certainly one of the most beautiful of the whole

group. Very generally and widely cultivated in Japanese gardens, *Prunus subhirtella* is not known anywhere in a wild state. The collection of Cherries is on the right-hand side of the road entering by the Forest Hills Gate.

Forsythias. A year ago the flower-buds on many of these plants had been destroyed by the severe cold of the previous winter, now they are all blooming as freely as usual. The handsomest of these plants at this time is a hybrid between two of these species, *Forsythia suspensa Fortunei* and *F. viridissima*, known as *F. intermedia*. There are several forms of this hybrid. The one called *F. intermedia primulina*, with pale canary yellow flowers, a seedling which sprang up spontaneously in the Arboretum a few years ago, is one of the most beautiful of these hybrid forms. *F. europaea*, a vigorous hardy plant with erect branches, is perhaps less beautiful in flower than the Chinese species but is interesting as an European representative of a genus otherwise confined to China and Korea. There is a collection of Forsythias in the Shrub Collection and a large mass of them at the lower end of the Bussey Hill Road.

Azaleas. The first of these plants to flower is *Rhododendron mucronulatum* (all the Azaleas are now called Rhododendrons). It is a tall, perfectly hardy, erect shrub with erect slender branches. The flowers are rose color and appear before the leaves. It has been in the Arboretum for more than thirty years but has not before flowered so freely as it has this spring. There is a large group of these plants on the lower side of Azalea Path, and although the flowers are beginning to fade it is well worth an early visit. Another Azalea from northeastern Asia, *Rhododendron dahuricum*, with rather smaller, darker colored flowers than the last to which it is closely related, has never flowered so well before in the Arboretum. There is a group of these plants on the upper side of Azalea Path.

Automobiles are not admitted to the Arboretum, but visitors who desire carriages to meet them at the Forest Hills entrance can obtain them by telephoning to P. J. Brady, Jamaica 670, or to Malone & Keane, Jamaica 344.

The subscription to these Bulletins is \$1.00 per year, payable in advance.

An illustrated guide to the Arboretum containing a map showing the position of the different groups of plants has recently been published. It will be found useful to persons unfamiliar with the Arboretum. Copies of this guide can be obtained at the Administration Building in the Arboretum, from the Secretary of the Massachusetts Horticultural Society, 300 Massachusetts Avenue, Boston, from The Houghton, Mifflin Company, 4 Park Street, Boston, at the Old Corner Bookstore, Bromfield Street, Boston, and at the office of the Harvard Alumni Bulletin, 50 State Street, Boston. Price, 30 cents.

ARNOLD ARBORETUM

HARVARD UNIVERSITY

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OF

POPULAR INFORMATION

JAMAICA PLAIN, MASS.

MAY 6, 1915

The Wild Pear Trees. The old collection of these trees is on the left-hand side of the Forest Hills entrance. Pear trees are natives of China and the Himalayas, and range westward through Persia and the Caucasus to southeastern and southern Europe. The genus has no representative in Japan or America. The wild types are rarely cultivated in this country, although as flowering trees some of the species are as beautiful as many of the better known Asiatic Crabapples and their leaves, both when they are unfolding and at maturity, are much handsomer than those of any of the Apples. The flowers of all Pear trees are pure white and their large, bright rose-colored anthers add to their attractiveness. Some of the Chinese species have been growing in the Arboretum since 1882 when Dr. Bretschneider sent here from Peking the seeds of a number of trees and shrubs from northern China. Among these were the seeds of what now prove to be three species of Pear trees. One of these, *Pyrus betulaefolia*, had been known earlier in France. It is a tall, rather narrow tree with pale foliage, comparatively small flowers and small russet fruits rarely more than half an inch in diameter. This is a fast-growing, shapely tree and has proved hardy in many of the northern dry cold regions of this country and Canada, and has sometimes been successfully used as a stock on which to work some of the varieties of garden Pears. Unfortunately it frequently suffers from the pear blight. More beautiful in flower and leaf is another of the Bretschneider Pears to which the name of *Pyrus phaeocarpa* has lately been given. This tree has unusually large flowers, large, deep green and very lustrous leaves and small, pear-shaped, russet brown fruits. There is a variety with globose fruit (var.

globosa) which except in the shape of the fruit is like the species. This is one of the handsomest of the small trees which have been introduced by the Arboretum in cultivation. The third of the Bretschneider Pears has been named for him, *Pyrus Bretschneideri*. This tree does not appear to grow to so large a size as the last, but it is perfectly hardy and the flowers and foliage are nearly as handsome. The fruit is globose or subglobose, about one inch in diameter, pale yellow, juicy and of good flavor. This is probably the tree from which at least some of the excellent and very juicy pears which are largely cultivated in the neighborhood of Peking have been derived. It is possible that this tree will prove useful to cross with some of the garden Pears in the hope of obtaining varieties which may prove hardier than any now in cultivation. Another Chinese Pear is one of the most distinct and interesting species of the whole genus. The leaves of most Pear trees fall in the autumn without change of color or turn to a dull bronze color, but the leaves of this tree late in the autumn turn as bright a scarlet as those of any American Red Maple or Gum tree. The fruit of a few Pear trees is globose, but its usual form is obovoid, that is the broad end is at the apex and the narrow end at the insertion of the stalk, but the fruit of this tree, unlike that of any other Pear tree, is ovoid, that is, it is broad at the insertion of the stalk and tapers to the apex. The fruit is about an inch and a half long, yellow, and of fairly good flavor. This tree was introduced into Europe nearly fifty years ago probably from northern China and has been known there as *Pyrus Simonii*. That name, however, had been given to a different species and this tree has now been named *Pyrus ovoidea*. It is possible that this species has also played some part in the development of the Chinese garden Pears. *Pyrus ovoidea* is one of the first of the Pear trees to open its flowers which are now fully expanded. The flowers of the other Chinese species and those from Europe will open during the next week. A supplementary collection of these trees has recently been planted at the base of Peter's Hill, and the new species discovered by Wilson in western China have also been planted in a special Chinese collection on Bussey Hill.

The Shad Bushes. The Arboretum is now gay with these plants which have been largely used here in the plantations along many of the drives. The general collection is in the border between the Meadow Road and the parallel walk on the left-hand side entering from the Jamaica Plain gateway. The distribution of these plants is peculiar. One species, a small shrub, occurs in the mountain regions of central Europe; another shrubby species is rather a rare plant in Japan, with a variety in western China where it is common and sometimes grows to the size of a small tree. In North America the genus is distributed from Labrador to Florida, and from the Atlantic to the northwest coast region, with several species in the dry interior region of the continent as far south as Arizona. The common name for these plants and their fruit among several of the northern tribes of Indians, Saskatoon, has been adopted for what is now an important city in Saskatchewan on the river of that name. Several species are common in the northeastern states and these in early spring add greatly to the beauty of

woods and swamps in this part of the country. Two of these species are native plants in the Arboretum, *Amelanchier laevis* and *A. oblongifolia*. The first is a tree of considerable size and an inhabitant of rich upland woods and dry banks. From the other species it may be distinguished by the red color of the young leaves. Until recently considered the *A. canadensis* of Linnaeus it has appeared under that name in nearly all American publications, but the true *A. canadensis* is now known to be a tree of the western and southern states where it is the only species and easily distinguished by the covering of soft pale hairs on the under surface of the leaves. Large wild plants of *A. laevis* are growing on the wooded bank in the rear of the Crabapple Collection on the Forest Hills Road. *A. oblongifolia* is a large shrub rather than a tree, although tree-like specimens sometimes occur, and is easily distinguished from *A. laevis* by the silvery color of the young leaves which at this season of the year are thickly covered with silky hairs. There is a large native specimen on the border of the meadow across the path from the Amelanchier Collection, and it is this species which has been most generally planted in the Arboretum and which may be seen along the borders of many New England swamps. There has always been much confusion about the American species of this genus, and it is only in late years that botanists are beginning to understand them. Reliance on the herbarium rather than on the living plants in their study, the inadequate descriptions of the authors who first described them, and the probable tendency of these plants to produce natural hybrids has until recently left them in what once appeared a hopeless state of confusion. The Arboretum has for many years been bringing together these plants in order to afford an opportunity for the critical study of the growing plants, and now in addition to the Asiatic and European species the following American species and some supposed hybrids are in flower in the collection, or will be in flower in a few days: *Amelanchier alnifolia* from the northwest coast, *A. canadensis* now nearly out of flower, *A. laevis*, *A. oblongifolia*, *A. sanguinea*, *A. humilis*, *A. stolonifera*, *A. spicata*, *A. pumila*, *A. florida* and *A. Bartramiana* (better known as *A. oligocarpa*). The last is the most northern of the eastern species and is a small shrub of cold swamps and bogs. Unlike the other species, the flowers are usually solitary or in few-flowered clusters. In cultivation it has been found to succeed better when it has been grafted on one of the strongly growing species than it does on its own roots. Practically unknown in cultivation, all these species are delightful garden plants, and the study of the collection in the Arboretum at this time will be found valuable to any one interested in dwarf, hardy, early flowering shrubs.

Early-flowering Viburnums. The two Viburnums which flower here first are among the most beautiful of all the plants in this genus which can be grown in New England. One is American and the other is a native of Korea. The American species, *V. alnifolium*, the Moosewood of northern woods, is one of the species on which the flower-clusters are surrounded by a ring of large pure white sterile flowers. It has broad, thick, heart-shaped leaves and showy fruit, and in the woods the straggling branches often take root and thus form thickets which

make travelling difficult. This plant has never really succeeded well in the Arboretum and is difficult to cultivate, although good plants may occasionally be seen in other Massachusetts gardens. There is now a small plant in flower among the dwarf Birches on the Bussey Hill Road opposite the Viburnum Collection. The Korean species, *V. Carlesii*, is rightly considered one of the handsomest plants recently introduced into American gardens. Its value is in the white, extremely fragrant flowers which are produced in rather small compact clusters and open from bright pink buds. As the flowers in a cluster do not all open at the same time the mixture of white flowers and pink buds adds greatly to the attractiveness of the inflorescence. It is a rather dwarf shrub of compact habit with pale green leaves and has not yet produced fruit in the Arboretum. There is a Japanese species, *V. bitchuense*, which somewhat resembles *V. Carlesii*, but the flowers are smaller and the habit of the plant is not so good. Mistaken by Japanese botanists for *V. Carlesii*, this plant has been propagated in Japanese nurseries and sent to the United States and Europe as *V. Carlesii*. In buying that plant care should be taken to secure the right species.

A Possible New Hedge Plant. At Tachien-lu on the borders of Tibet, at about eight thousand feet above the sea, Mr. Wilson found hedges from 6 to 8 feet high and so thick and spiny that a yak, an animal as strong as an ox, could not break through them. The plant of which these hedges were made, *Ribes alpestre*, var. *commune*, is now in flower in the collection of Chinese shrubs on Bussey Hill. This Gooseberry has grown rapidly in the Arboretum and appears to be perfectly hardy. There is little to recommend it as a garden shrub for the flowers are small and inconspicuous, and the acid fruit is covered with prickles and has little beauty, but as a hedge plant it may prove valuable in the cold parts of the country.

***Prinsepia sinensis*.** This Chinese shrub, which has been growing in the Arboretum since 1903, has proved itself to be a first-rate garden plant for regions as cold as New England. It is a plant with long and gracefully ascending and spreading branches, the bright green leaves are almost the first to appear in the whole collection, and when they are more than half-grown from their axils the bright yellow flowers, which are about two-thirds of an inch in diameter, appear in few-flowered clusters. The largest plant in the Arboretum is on Hickory Path near Centre Street, and there is a plant also in the general Shrub Collection.

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JAMAICA PLAIN, MASS.

MAY 13, 1915

Asiatic Crabapples. During the next few days the Crabapples from eastern Asia will be the most conspicuous flowering plants in the Arboretum. The old collection is on the left-hand side of the Forest Hills Road. There is a larger collection containing a larger number of varieties at the eastern base of Peter's Hill, and the species found by Wilson in western China have also been planted on the southern slope of Bussey Hill, just below the Overlook. The best known of the Asiatic Crabapples in gardens is called *Malus floribunda*. It is shrubby rather than treelike in habit and makes a broad, round-topped bush sometimes twenty-five feet tall and broad. This plant blooms profusely every year and is most beautiful when the flowers begin to open for they open gradually and in succession, and the contrast of the white flowers with the bright rose-colored flower-buds greatly adds to the beauty of both. The fruit is not much larger than a pea, and adds little to the ornamental value of this plant. The origin of *Malus floribunda* is obscure. Although first sent to Europe from Japan more than sixty years ago, it is not a native of Japan and was probably carried there from China with many other plants found in Japanese gardens and long believed by European travellers to be native to the Island Empire. By some botanists it is thought to be a hybrid, and although its seedlings show some variation this hypothesis has not yet been clearly proved. The whole question of the origin and proper limitation of the species of Asiatic Crabapples is greatly complicated by the fact that all Apples hybridize so freely that plants raised from seed gathered from plants in a large collection like the one in the Arboretum rarely resemble the parent plant. This tendency to natural

hybridization among the Apples, while it makes endless trouble for the systematic botanist, has advantages for the gardener, as has already been seen in the Arboretum where one of the most beautiful of all flowering Apples, now called *Malus Arnoldiana*, appeared a few years ago among seedlings of *M. floribunda*. This plant is also shrubby in habit, with flowers more than one-half larger than those of *M. floribunda* and much larger fruits. It is probably a hybrid with some of the large-flowered hybrids of the Siberian *Malus baccata*. Near the Administration Building are large seedling plants raised from *M. floribunda* which are peculiar in their persistent fruit which remains in good condition on the branches until spring and supplies the birds with an abundant supply of winter food. Another supposed hybrid between two species of eastern Siberia, sometimes called *Malus cerasifera*, is common in the Arboretum in various forms. With plenty of space this grows into a large, wide-spreading tree. The pure white flowers are perhaps larger than those of any of the other Crabapples. The fruit on different plants varies in color and greatly in size and shape, on some trees retaining and on others losing the calyx. Selected forms of this tree can only be obtained by grafts. *Malus Halliana*, usually known as the Parkman Crab, was found in Japanese gardens by Dr. Hall and sent to the United States in 1861 in the first consignment of plants to reach the United States direct from Japan, and was first cultivated by Francis Parkman, the historian, in his garden on the shores of Jamaica Pond, now in the Boston Park System. This is a treelike shrub with erect and spreading stems and is smaller than *Malus floribunda*, differing from it in its darker bark, thicker leaves deeply tinged with bronze color when they unfold, and semidouble, bright rose-colored flowers drooping on long slender stems, and in its smaller fruit which is not larger than a small pea. Some persons consider this the most beautiful of the Crabapples, and certainly the color of the flowers is unlike that of any of the others. The origin of this plant was unknown till Wilson found it growing in western China near the borders of Tibet. Another Chinese Crab, *Malus spectabilis*, is usually found in gardens only in the form with double or semidouble flowers. It is a tree with erect, slightly spreading stems which form a vase-like head, and in some of its forms is an attractive and useful plant. *Malus Scheideckeri*, which is no doubt a hybrid although of uncertain origin, is a small tree of pyramidal habit which usually produces its comparatively small pink flowers in such profusion that it should find a place in every collection of these plants. *Malus (Pyrus) toringo* was first used as a name for a Japanese Crabapple, and there are two or three Japanese forms in the collection here under that name. In 1882 the Arboretum received from Dr. Bretschneider, then at Peking, seeds of a Crabapple which has been growing here ever since and has been considered a form of the Japanese *M. toringo* from which, however, it differs in its much smaller and later flowers and smaller fruits which on some individuals are red and on others yellow. Although one of the least showy of the Crabapples, this Chinese tree is valuable as it flowers after the others have passed. Two other Japanese species are well represented in the collection from seeds collected

by Professor Sargent in Japan in 1892, *Malus zumi* and *M. Sargentii*; the former is a common tree on the mountains of central Japan and the latter is an inhabitant of the borders of salt marshes in Hokkaido. The dwarf habit of this species makes it a good subject for small gardens. The rather small flowers are produced in great abundance, and the dark red fruits remain on the branches until growth begins the following spring. *Malus baccata* is a common tree in eastern Siberia, and was one of the first of these plants introduced into Europe. It has no doubt played an important part in the introduction of many hybrid forms, including the so-called Siberian Crabs, like the "Transcendent" and many other well known varieties. These are supposed hybrids between the common Apple and *Malus baccata*; among them are some of the most beautiful flowering plants in the whole Apple Group. The flowers are followed by brilliant fruits valuable in cooking and for preserves. The Siberian Crabs are hardier than any of the domestic Apples and have therefore been found valuable in some of the colder parts of Canada and the United States where other Apples cannot be grown. In cultivation *Malus baccata* is a tall narrow tree with small nearly white flowers and fruit about the size of a pea. There is a fine specimen of this tree in front of the gardener's house in the Harvard Botanical Garden in Cambridge. It is impossible within the limits of one of these bulletins even to mention the names of all the species, hybrids, forms and varieties of these plants in the collection which has been in process of formation for nearly forty years and must now be one of the most complete in existence. It will well repay a careful study, especially the new collection at the base of Peter's Hill. Few plants are better suited to the New England climate than the Crab-apples; they all produce beautiful flowers and many of them brilliant fruit. It should not be forgotten, however, that all Apple-trees are liable to be attacked and killed by the San José scale, and that it is unwise to plant them unless this pest can be kept in check by careful spraying.

Early-flowering Honeysuckles. Some of the early Bush Honeysuckles are already in flower; indeed the pale yellow fragrant flowers of two Chinese species, *Lonicera Standishii* and *L. fragrantissima* have already fallen. These plants have long been favorites in the gardens of the middle and southern states where they grow to a large size and form round-topped shapely bushes. In New England, however, these plants are not always perfectly hardy and it is not usual for them to flower as well as they have this spring. Other species already in flower in the Shrub Collection are *Lonicera tangutica*, with small pink flowers, *L. syringantha*, var. *Wolfii*, with very fragrant violet-colored flowers, *L. canadensis* and *L. utahensis*, with pale yellow flowers, the geographical forms of *L. coerulea*, with larger yellow flowers, and the beautiful Japanese *L. gracilipes*, with its drooping pink flowers. For another month, at least, different Honeysuckles will be opening their flowers, and these will be followed on many species by brilliant fruits which often make these plants conspicuous in summer and autumn.

Currants and Gooseberries. Many interesting plants now in flower will be found among the Currants and Gooseberries (*Ribes*) in the Shrub

Collection. The two yellow-flowering American Currants are still the most attractive perhaps of all these plants. The better known of these, the so-called Missouri Currant (*Ribes odoratum*), is still a favorite garden plant in the United States and is found in many old gardens. It owes its popular name to the fact that it was first found on the upper Missouri River; it is now known to occur on the great plains from South Dakota to Texas. In many books this plant appears as *Ribes aureum*, but this name properly belongs to a smaller plant from the northwest and the northern Rocky Mountain region, with more slender branches, smaller flowers and black or orange-colored fruits; it appears to be extremely rare in cultivation. The two plants are growing together in the general Shrub Collection and the difference in their general appearance and the structure of their flowers can be readily seen. One of the Rocky Mountain Currants, *Ribes cereum*, with small white flowers, is as usual attractive at this season. Among Gooseberries already in flower the most interesting, perhaps, are *Ribes pinetorum*, from the mountains of New Mexico and Arizona, with bright orange red flowers, *R. niveum* from northwestern North America, with pure white flowers, *R. Cynosbati* from eastern North America, *R. stenocarpum* from western China, with white flowers, and *R. robustum*, a vigorous white flowered plant and probably a hybrid.

Early Lilacs. Two Chinese Lilacs *Syringa affinis*, with white flowers, and the lilac-colored form of this species, var. *Giraldii*, are already in flower in the Lilac Group. The white-flowered form is largely cultivated in the gardens of Pekin, and the variety comes from the Province of Shensi. The flowers of these two Lilacs are fragrant and beautiful but their open and irregular habit of growth is not attractive. They are certainly valuable, however, for the earliness of their flowers.

The Oak Collection. This is one of the best times of the year for the study of Oak-trees. The unfolding leaves are beautiful, and in their color, in the absence or presence of a hairy covering and in the character of this covering when it exists, are found characters by which the different species may often be easily recognized. These vernal characters indeed are less variable than those like the shape of the leaves and the size and shape of the fruit which are usually depended on for the recognition of Oak-trees. Unfortunately only a comparatively few species can be successfully grown in New England. Of the fifty odd species in the United States only twenty-one species and a few natural hybrids are hardy in the Arboretum. The Oaks of western Europe are hardy but are usually short-lived and unsatisfactory here; the few deciduous-leaved species of eastern Asia flourish here but no Oak-tree with evergreen leaves can be grown in the Arboretum where none of the California, Mexican or Himalayan species can be found.

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OF

POPULAR INFORMATION

JAMAICA PLAIN, MASS.

MAY 19, 1915

Lilacs. To most persons the Lilac is the shrub with red-purple or with white flowers to which botanists have given the name of *Syringa vulgaris*. There are, however, many other kinds of Lilac, and in addition to *Syringa vulgaris* and some one hundred and fifty seedling forms of it there are twenty species and several hybrids in the Arboretum collection. The common Lilac is said to have reached western Europe from Constantinople; it was cultivated in a garden near London in 1593 and had become known in the United States at least as early as the middle of the eighteenth century. Washington wrote of it in his diary and planted it at Mt. Vernon where his plants or their descendants still flourish. One of the most popular of garden plants in all cold and temperate countries, the original home of this Lilac remained unknown for three centuries after its introduction into England. Some writers believed it to be a native of Persia and others considered central Asia or northern China its home, and it is only a few years ago that it was discovered to be a native of the mountain forests of Bulgaria. Specimens of the wild plant raised at the Arboretum from seeds collected in Bulgaria are growing on the left-hand side of the walk going up the hill through the Lilac Collection and are labeled "*Syringa vulgaris*, Bulgaria." It is interesting to compare the narrow clusters of small lilac-purple flowers with the large ones of many shades of color which gardeners in the last three centuries have developed from the wild plant. It is evident that no great additional improvement can now be expected from seedlings of the common Lilac. The beauty limit appears to have been reached and many of the seedlings raised in recent years and named and sold by nurserymen show no

improvement on the older varieties, and all that is best in these plants can really be found in a dozen varieties or less. The Arboretum is often asked to furnish a list of the best varieties. This is difficult to do for what one person may like in the color of a flower another may not care for. The following, however, are good varieties, and a Lilac garden confined to these varieties would certainly be more beautiful than one in which the attempt was made to plant together all the varieties that have received names: Charles X (rosy lilac), Philemon, Ludwig Späth and Congo (dark red-purple), Macrostachya and Gloire de Moulins (double white), Marie Legraye (single white), Madame Lemoine and Miss Ellen Willmott (pink), Justi (blue). It must be remembered that the Arboretum collection of these plants is intended to show what not to plant as well as to show the most desirable varieties to plant. Next to the common Lilac the Persian Lilac, *Syringa persica*, is probably the best known species. It reached England fifty years later and ever since has been a popular garden plant as it flowers after the common Lilac. There are pale rosy purple and white-flowered varieties and one with deeply-divided leaves (var. *laciniata*). A little more than a hundred years ago a hybrid between the common and the Persian Lilac appeared in the Botanic Garden at Rouen. This proved to be one of the handsomest, hardiest and most vigorous of all Lilacs, recalling its Persian parent in its small flowers produced, however, in enormous clusters, its slender branches and narrow leaves, while the color of the flowers shows the influence of *Syringa vulgaris*. Unfortunately, under the supposition that this plant had come from China, it was named *Syringa chinensis*, the name under which it must be known; it is also sometimes called *Syringa rothomagensis*. There is a variety with pale nearly white flowers (var. *alba*). A Lilac from northern China, *S. pubescens*, is still too little known in gardens; it is a tall shrub with erect stems, small leaves and broad clusters of pale lilac-colored flowers remarkable for the long tube of the corolla and for their delicate fragrance. For this fragrance, if for no other reason, this Lilac should find a place in every northern garden. Another Lilac from northern China, *S. villosa*, is a large vigorous shrub with pale rose-colored or nearly white flowers which have a distinctly disagreeable odor. The flowers, however, are handsome and abundant, and this plant should be cultivated for it is the last to bloom of the true Lilacs. The crossing of this plant in Paris a few years ago with the small-flowered Hungarian Lilac, *S. Josikaea*, produced a race of hybrids of extraordinary beauty. The general name for these hybrids is *Syringa Henryi*, so named in honor of the gardener who produced them. One of this hybrid race, called Lutèce, is one of the most beautiful of all garden Lilacs, although its Hungarian parent is perhaps the least beautiful of the whole genus and the last species most breeders would have chosen for the production of a new race of garden plants. The beauty of Lutèce shows that it is impossible to foretell what hybrids may produce and makes it reasonable to hope that by the use in this way of some of the new species discovered by Wilson in western China new hybrid races may be obtained of distinct value as garden plants. All the new species from western China are growing well and

promise to be perfectly hardy. The flowers of none of them, however, are as handsome as some of those of the better known species, although *Syringa reflexa* is interesting as the only Lilac which bears its flowers in drooping clusters. These new Chinese Lilacs are planted along the southern end of the grass path which follows the top of the bank occupied by the Lilac Collection. Lilacs have been flowering in the Arboretum now for the last two weeks and will continue to flower until the first of July. Most of the varieties of the common Lilac will be in flower when this Bulletin reaches its readers living near Boston.

Red-flowered Azaleas. When the red-flowered Japanese Azalea (*Rhododendron Kaempferi*) blooms it is one of the great periods in the Arboretum. It is planted in masses at the lower end of Azalea Path, in a large group under the shade of the Hemlocks on Hemlock Hill, and on the northern edge of Hemlock Hill in a long narrow band between the Hemlocks and the Laurels (*Kalmia*). The flowers of this plant are so delicate that they soon fade when fully exposed to the sun, and it is desirable to select a partially shaded position for it similar to the northern base of Hemlock Hill. Here the plants flower a week or ten days later than they do on Azalea Path, where they are now fully open, and so prolong in the Arboretum the flowering period of this brilliant hardy shrub.

A new Korean Azalea. Among the plants introduced into the Arboretum by Mr. Jack a few years ago one of the most valuable is an Azalea which has now been named *Rhododendron coreanum*. In cultivation here it is a low, compact, round-topped shrub with large, rosy mauve or red-violet flowers marked near the base of the corolla with small dark spots; the flowers of few Azaleas have a more delicate and delightful perfume. During the past week a number of these plants on the upper side of Azalea Path have been covered with flowers. They have been growing here in one of the most exposed spots in the Arboretum for three years and have never been at all injured by cold or drought, and it seems safe to predict that this Azalea will be a first-rate plant for New England gardens.

An interesting Apple. Little is known in this country of an Apple tree *Malus ringo*, which is one of the latest of the Asiatic Apples to flower in the Arboretum. It was introduced from Japan into Europe by Siebold some sixty years ago and was called by him *Pyrus ringo*, Ringo being the common name for the Apple tree in Japan. It is not a Japanest tree, however, but before the introduction of European Apples appears to have been generally cultivated there. Now it is rare in Japan although occasionally found in the north where it is called Rinke, having been replaced in the more southern parts of the country by varieties of European or American Apples. Wilson in his travels in China discovered this Apple-tree growing wild on the mountains of Hupeh at elevations of from four thousand to five thousand feet above the sea and that it is the cultivated Apple of western China. The interesting thing about this tree is that it flourishes equally well as a fruit tree in the hot climate of Ichang, only a few feet above the sea level, where oranges ripen their fruit, and on the borders of

Tibet, at altitudes of over eight thousand feet. This shows that this tree has a remarkable constitution, and suggests the possibility of crossing it with some of our cultivated Apples with the view of obtaining a race capable of producing fruit in warm climates like Florida and southern California. As an ornamental tree it is valuable for the lateness of its abundant and fragrant flowers and handsome fruit which is oval, red or yellow, and from an inch to an inch and a half long.

Fothergilla. This is a genus of shrubs related to the Witch Hazels. The small white flowers are produced in nearly round terminal clusters. The foliage has the general appearance of that of the Witch Hazel and in the autumn turns to brilliant shades of red and orange. The largest specimen in the Arboretum is a plant of *F. major* in the Hamamelis Group near the small pond at the junction of the Meadow and Bussey Hill Roads; and three species can be seen in the Shrub Collection and on Azalea Path where there are a number of plants. First cultivated in England more than a century ago, Fothergilla seems to have disappeared from gardens until it was reintroduced by the Arboretum a few years ago. All the species are plants of much interest and great beauty but it is doubtful if any of them can now be found in any commercial nursery.

Siberian Pea-trees. This is the popular name of the plants of the genus *Caragana* of the Pea Family. They are very hardy, free-flowering shrubs or small trees from Siberia and northern China, with showy yellow flowers which are often followed by conspicuous pod-like fruits. Several of these plants which are arranged in the Shrub Collection are now in flower. Less commonly cultivated, perhaps, than they were fifty years ago and not often seen in American gardens, the Siberian Pea-trees are well suited for the colder parts of the United States and for Canada.

The Flowering Dogwood. This tree (*Cornus florida*) is now in flower and of unusual beauty this year. It is not native in the Arboretum but has been largely planted here and is now the most conspicuous plant, perhaps, in the roadside plantations. Comparatively rare in this latitude, the Flowering Dogwood is very abundant southward, and in early spring gives to the forest margins of the middle and southern states one of their greatest charms. The Flowering Dogwood of the east, beautiful as it is, is not so handsome as the species from the Pacific States, *Cornus Nuttallii*, which is a tree sometimes sixty or seventy feet high with involucres to the flower-clusters nearly twice as wide as those of *Cornus florida*. *Cornus Nuttallii* grows in damp woods under the shade of coniferous trees and is difficult to keep alive outside its native forests. It has never succeeded in the Arboretum and appears to have flowered in Europe in only a few gardens. The Japanese representative of this group, *Cornus kousa*, is hardy and flowers abundantly in eastern Massachusetts. It is a small tree which flowers later than *Cornus florida* and differs from it in its smaller pointed floral bracts, and is chiefly valuable for prolonging the flowering time of these beautiful plants.

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Hawthorns. Hawthorns (*Crataegus*) have been in flower in the Arboretum during the last two or three weeks, and others will flower in succession until nearly the first of July; on some of the species the fruit ripens in August and on others as late as November; and in a collection of these trees and shrubs there is much beauty of flower and fruit to be seen during more than half the year. The genus is more largely represented in species and in the number of individuals in eastern North America than in other parts of the world; a few species are found in the Rocky Mountain region and in the Pacific states; there is a single species in Japan, and less than twenty in all continental Asia. There are, however, several species in southwestern, southern and central Europe and two species in western Europe. Before 1900, when the study of American Hawthorns was begun seriously at the Arboretum, little was known about the American species which had been singularly neglected by American botanists and American gardeners. Several species, however, had reached Europe at the time when European plant collectors were sent to America, and a few American species had been described by European botanists from plants cultivated in European gardens. Twenty years ago plants raised from seeds collected principally in Missouri and Arkansas in 1880 began to flower in the Arboretum and could not be referred to any of the species which had been previously described. This led to a systematic study of the wild plants in many parts of the country, and to the bringing together here of a large amount of material. During the last fifteen years many species have been described at the Arboretum by authors working independently, and Mr. Dawson has sown the seeds of 3306 Hawthorns gathered in the United States from wild plants.

It cannot be said, however, that this investigation has been more than commenced and there are still great regions in the United States where Hawthorns are known to exist which have not yet been worked critically with reference to this genus. Some of the plants which these seeds sown at the Arboretum have produced have been arranged on the eastern slope of Peter's Hill and others have been widely distributed in this country and Europe. There is a large collection also of Hawthorns mainly obtained at the Arboretum in the parks of Rochester, New York, and there is one large Arboretum collection in England and another in France. In a few years, therefore, there will be a good opportunity for a comparative study of these plants from a botanical and horticultural standpoint, for last year some three hundred and fifty different species flowered on Peter's Hill and probably this year a still larger number will produce flowers and fruits there. Of the species which have grown to a large size in the Arboretum and have proved themselves desirable garden plants may be mentioned *Crataegus Arnoldiana*, *C. mollis*, *C. arkansana*, and *C. submollis*. These belong to the Molles Group, in which the species are trees with wide heads, large early flowers and large, usually brilliant scarlet fruits. A large plant of *C. coccinioides* in the old Crataegus Collection, between the Shrub Collection and the Parkway and near the Forest Hills entrance, has itself shown this year the decorative value of an American Hawthorn. It is a round-headed tree from the neighborhood of St. Louis with large flowers in very compact, nearly globose clusters and large round fruit ripening in the early autumn. In this old collection are other plants which are now large enough to show their value for the decoration of parks and gardens; from among them attention is called to *C. Crus-galli*, the Cockspur Thorn, which has perhaps been more generally cultivated than any other American species and is the type of one of the most distinct of the groups into which the genus is divided; *C. nitida*, a flat-topped tree with wide-spreading branches and narrow lustrous leaves. Although the flowers and fruits are comparatively small, their abundance, the lustre of the leaves, and the habit of the tree make it one of the handsomest of the Thorns which can be successfully cultivated in this climate. *C. pruinosa*, *C. aprica* and *C. succulenta* are well represented here and are good examples of three large and distinct groups. *C. pruinosa* is a small tree with smooth bluish green leaves, large flowers made conspicuous by the large rose-colored anthers of the twenty stamens, and globose fruits, bright green and covered with a glaucous bloom when fully grown, and turning scarlet late in the season. In all eastern North America there are few handsomer Thorns. *C. aprica* is interesting as one of the few hardy representatives of the Flavae Group which is entirely confined to the southeastern states with a few representatives ascending into the valleys of the southern Appalachian Mountains. It is not one of the handsomest species of the group for the flowers are not so large as those of many others, and the anthers of the ten stamens are yellow. *C. succulenta* is a showy representative of the Tomentosae Group which is one of the largest of the northern groups and is specially beautiful in autumn when the branches are covered with large clusters of drooping scarlet translucent fruits. Two black-fruited

species are interesting in the old collection, *C. Douglasii* from Washington and Oregon, and *C. rivularis* from the region between the Rocky Mountains and the Sierra Nevada. Many species in the new collection on Peter's Hill are already large enough to show their character and value, especially those in the Intricatae Group. Nearly all the species in this group are small shrubs of the northern and middle states with large flowers, yellow or rose-colored anthers, and large, showy, late-ripening fruits. Long entirely overlooked by American botanists, this group contains some of the most beautiful garden plants to be found among North American shrubs. Among foreign species the earliest to flower in the Arboretum is *Crataegus nigra*, a tree from eastern Europe with large flowers and early-ripening black fruit. There is a large specimen in the old collection near the southern end of the Willow Collection. The two species of western Europe, *C. oxycantha* and *C. monogyna*, and many varieties are, of course, established in the Arboretum where *C. orientalis* from southeastern Europe, with deeply divided silvery leaves, large flowers and orange and red fruit is a plant which deserves the attention of all lovers of hardy trees and shrubs. The most beautiful, however, of all the foreign Thorns here is *C. pinnatifida* from eastern Siberia and northern China. The large, deeply divided and lustrous leaves make this one of the handsomest plants of the whole genus; the flowers are large and abundant, and the crimson fruits are produced in profusion. A form of this plant (var. *major*) with larger leaves and much larger fruit, is cultivated in orchards as a fruit tree in the neighborhood of Peking. With the exception of a few varieties of the species of western Europe with red, rose-colored or pink flowers, all Hawthorns have white flowers; they are therefore less showy when in bloom than many of the Crabapples, on most of which the flowers are more or less tinged with pink. The flowering period, however, is much longer and the fruit is far more beautiful than that of any of the Asiatic Crabapples. As flowering plants the Hawthorns are certainly less beautiful than some of the Japanese Cherries, but Cherry blossoms last only a few days and the fruits of the Japanese species have no ornamental value. Like many other trees and shrubs of the Rose family, *Crataegus* suffers from the attacks of the San José scale, and the leaves of some species are badly disfigured by a leaf miner.

American Crabapples. Several of the American Crabapples are now in bloom. Those of the eastern states produce large, pink, very fragrant flowers which do not open until the leaves are partly grown, and depressed-globose, fragrant, greenish yellow fruits covered with a sticky exudation. The earliest to flower, *Malus glaucescens*, may be seen in the Peter's Hill group. It is a native of western New York and of Ontario, and is a treelike shrub or small tree distinguished from the other northern species by the pale lower surface of the leaves and the hairy covering on the outer surface of the calyx of the flower. The best known of the northern species, *M. coronaria*, flowers a little later and can be seen in the old collection on Forest Hills Road opposite the end of the Meadow Road. Here also are *M. ioensis* from the Mississippi Valley and its double-flowered variety known as the Bechtel Crab.

The double pink flowers of this tree look like roses, and when it is in bloom excite the interest and admiration of visitors to the Arboretum. In the old collection, too, are plants of *M. fusca*, the only wild Apple tree in the Pacific states, and a plant of *M. Dawsoniana*, a hybrid between *M. fusca* and the common Apple which appeared many years ago in the Arboretum. The Crabapple to which the southern forests owe so much of their spring beauty, *M. angustifolia*, fortunately has proved hardy in, the Arboretum, and there are large specimens on Centre Street walk in the rear of the Hickories and in the Peter's Hill Apple Group. It is the latest of the American species to flower, and the flowers are of a rather deeper pink than those of the other American species. In the Peter's Hill Collection may be seen several plants of *M. Souldardi*, a tree which occurs occasionally over large areas in the Mississippi valley and is believed to be a natural hybrid between *M. ioensis* and the common cultivated Apple.

Two Chinese Roses. For many years the Cinnamon Rose, *Rosa cin-namomea*, has been the first Rose in the Arboretum to open its flowers but this year two Chinese species are beginning to flower at the same time. These are *R. Hugonis* and *R. omeiensis*. The former has pale yellow single flowers about two and a half inches in diameter and is a tall, perfectly hardy free-flowering shrub with slender erect and spreading, pale brown stems and small pale leaves. There are not many yellow flowering Roses that are perfectly hardy and free-flowering in this climate and *R. Hugonis* is certainly one of the most valuable single Roses which has lately been introduced into gardens. It is a native of western China and was first raised in England from seeds sent to the British Museum by the missionary for whom it has been named. There is a plant of this Rose in the Shrub Collection which will be in full bloom when this Bulletin reaches its Massachusetts readers. *Rosa omeiensis* is flowering in the Arboretum for the first time. It is a vigorous shrub with young stems covered with bright red prickles, and pure white fragrant flowers hardly more than an inch in diameter, borne singly at the ends of short lateral twigs, and bright red ellipsoidal fruits which are borne on stout, elongated, yellow, fleshy stalks, and are very showy. It is common on many of the mountain ranges of western China at elevations of from 6,000 to 11,000 feet above the sea, and sometimes grows twenty feet tall and forms great thick-kets. Its name is derived from that of one of the sacred mountains of China, Mt. Omei, where it is common. This Rose promises to be a valuable and distinct garden shrub in this climate, and its hardiness, vigor and stout stems armed with numerous straight spines suggest its value as a hedge plant. It will be found in the collection of Chinese shrubs on the southern slope of Bussey Hill with the other Roses raised from seeds collected by Wilson in western China.

By an unfortunate typographical error on page 14 of the last issue of these Bulletins (No. 4) the flowers of the Lilacs *Macrostachya* and *Gloire de Moulins* were described as double white instead of pink, and the flowers of *Madame Lemoine* and *Miss Ellen Willmott* were described as pink instead of double white.

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American Azaleas. No other plants add more to the beauty of mountain slopes and forest glades in eastern North America than Azaleas, which are more abundant and more varied in the color of their flowers in the Appalachian region than in any other part of the world. Of the ten species found in the eastern United States seven are established in the Arboretum, and the others from the extreme south, although in the Arboretum nurseries, are too young to show their ability to withstand the rigors of the New England climate. All Azaleas are now called Rhododendrons. The first species to bloom, *R. Vaseyi*, begins to flower the beginning of May, and the flowers of the last, *R. viscosum*, can be found as late as the middle of July. The Azalea season is therefore a long one. *R. Vaseyi* is a tall shrub with slender stems and of open irregular habit; in its home in a few isolated mountain valleys in South Carolina it sometimes grows to the height of fifteen feet. The flowers are produced before the leaves appear, in small compact clusters, and are pure pink in color, plants with white flowers occasionally appearing. With *R. Vaseyi* the Rhodora (*R. canadense*) blooms. This is a well known dwarf shrub often covering in the north large areas of swampy land with a sheet of bloom. The small flowers, however, are of a rather unattractive rose-purple color. Naturally the Rhodora grows from Newfoundland to Pennsylvania and New Jersey. The next to bloom are *R. canescens* and *R. nudiflorum*, and although the two sometimes grow together the former is a northern and the latter a more southern plant, and is especially common in the Gulf States from eastern Florida to eastern Texas. The rosy pink flowers of these plants open before or with the unfolding of the leaves, and in early spring fill the woods with their beauty and fragrance.

These plants can now be seen in flower on Azalea Path and there is a mass of *R. canescens* on the Meadow Road in front of the Linden Group. *R. calendulaceum* is the next species to flower, and a few plants have already opened their orange, yellow or reddish flowers which are not fragrant. This shrub is an inhabitant of the mountain regions from southern New York to Georgia, and is extremely abundant on the lower slopes of the high mountains of North Carolina and Tennessee. In flower it is the most showy of the American Azaleas established in the Arboretum, and one of the most beautiful of all flowering shrubs. A large mass of this Azalea has been planted on the slope below Azalea Path, and occasionally large specimens can be seen on the border plantations along some of the roads. The next species to flower, *R. arborescens*, is also a native of the mountain region from Pennsylvania to Georgia where in sheltered valleys it sometimes grows from fifteen to eighteen feet tall. The flowers, which appear after the leaves are nearly fully grown, are white or faintly tinged with rose color, and are made conspicuous by the long bright red filaments of the stamens; they are very fragrant, and the young leaves have the odor of new mown grass. Less showy in the color of the flowers, perhaps, than the yellow-flowered Azalea, it is one of the most beautiful of all hardy Azaleas. The last species to flower, the Clammy Azalea or Swamp Honeysuckle, *R. viscosum*, is a common inhabitant of the swamps of the eastern states, especially of those in the neighborhood of the coast. The small flowers are pure white and covered with clammy hairs, and the leaves are often of a pale bluish color, especially on the lower surface. This plant is valuable for the lateness of its flowers which do not open before the flowers of most hardy shrubs have passed, and for their fragrance. These shrubs are all good garden plants although, like other Rhododendrons, they cannot be made to live in soil impregnated with lime. They are not often cultivated, however, because it is not easy to find them in nurseries, for few nurserymen in the United States care to take the time and trouble to raise such plants from seeds, the only successful way in which they can be propagated.

The new Chinese Cotoneasters. Of the shrubs introduced from western China by Wilson the most successful perhaps as garden plants belong to the Old World genus *Cotoneaster*. At least eighteen of these species are hardy in the Arboretum, and several of the plants have now grown large enough to show their habit, the beauty of their flowers and fruits, the brilliancy of their foliage and their ability to adapt themselves to the peculiarities of the New England climate. The most showy species now in flower are *C. multiflora* and its variety *calocarpa*, and *C. hupehensis*. *C. multiflora* is a tall shrub with slender, wide-spreading, gracefully arching, bright chestnut brown stems and branches, dull pale gray leaves, white flowers half an inch in diameter borne along the whole length of the branches in compact clusters on short lateral twigs, and black fruits. *C. multiflora* is a widely distributed and common plant in southern Siberia and northern and western China, and has been in cultivation for several years. The variety, which has larger fruits, was discovered by Wilson near Sung-pan Ting

in the Minn valley. *C. hupehensis* is perhaps even more beautiful as a flowering plant than *C. multiflora*, for although the white flowers are smaller they are less covered by the smaller leaves. It is a large, wide-spreading shrub with very slender arching stems and branches which are now so covered with flowers that from a distance it is hard to realize that it is a *Cotoneaster* and not a *Spiraea*. The fruit is bright red and very beautiful. *C. foveolata* is a large vigorous plant with stout arching stems from six to ten feet high, large thin leaves dark green and lustrous above and pale below with prominent veins deeply impressed on the upper surface. The flowers are small, globose and red, in compact clusters, on stalks much shorter than the leaves by which they are a good deal hidden. The fruit is black and lustrous. The greatest beauty, perhaps, of this plant is in the autumn color of the leaves, for after the leaves of most American shrubs have fallen those of this Chinese *Cotoneaster* change to brilliant shades of orange and red. There are few more beautiful autumn plants in the Arboretum. Something like *C. foveolata* in the size and color of the flowers and in the shape of the smaller leaves is a variety of the north China *C. acutifolia* from the borders of Tibet (var. *villosula*) which is also in flower. This is a dwarfer and more compact shrub than *C. foveolata*, with black fruits and bright autumn colors. Another set of these plants is distinguished by small dark green leaves, small red flowers and red fruit. The best known of these, *C. horizontalis*, has been in cultivation now for several years and is not rare in European gardens. It is a low shrub with wide-spreading branchlets which when trained against a wall grow several feet tall, but untrained form a dense mat two or three feet high and sometimes six or eight feet in diameter. In this climate the leaves remain on the branches without change of color until early winter, but in milder climates do not fall until the spring. The best specimen of this handsome plant in the Arboretum is on Hickory Path near Centre Street. *C. divaricata*, which is also in flower, is a larger plant with wide-spreading stems forming a rather open head, and bright red fruit. From this the related *C. nitens*, which is a smaller shrub, differs chiefly in its more compact habit and reddish black fruit. Distinct with prominent stems forming mats only a few inches high are *C. adpressa* and *C. microphylla*. These are useful little plants for the rock garden and for the edging of garden walks. Several of the Chinese *Cotoneasters* are in the general Shrub Collection and on Hickory Path, but the best specimens are in the Chinese Shrub Collection on the southern slope of Bussey Hill where these plants have been growing for four years in an exceedingly exposed position and without protection.

Flowering Ashes. This is the common name for a group of Ash trees (*Fraxinus*) with elongated white petals which make the flowers conspicuous. They are natives of southern and southeastern Europe, the Himalayas and western and northern China. A shrubby species, *F. dipetala*, is common in California, and two Mexican species extend into the territory of the United States, one in southern Texas and the other in Arizona where it ranges as far north as the rim of the Grand Cañon of the Colorado River. The type of the group, *Fraxinus*

Ornus, is a common tree in southern Europe, and is now in flower at the upper end of the Ash Group near the top of the eastern slope of Bussey Hill. Manna is the hardened sap of this and a related species. Another species of Flowering Ash, *F. Bungeana*, is also in flower near *F. Ornus*. This is an old inhabitant of the Arboretum and is an irregularly growing shrub ten or twelve feet high from the mountains near Peking. It flowers here regularly every year and produces large crops of seeds. The plant of a third species, *Fraxinus Paxiana*, will soon be in flower. This is one of Wilson's discoveries in western China and is flowering this year for the first time in America. It is a small tree remarkable for the large size of the nearly globose terminal winter-buds.

A new Diervilla. Among the plants brought from Korea a few years ago into the Arboretum by Mr. Jack is a form of *Diervilla florida* which has been named var. *venusta*. This is one of the handsomest of all Diervillas and one of the earliest to flower. It is very vigorous and every year completely covers itself before the leaves are half grown with large rosy pink flowers. Few of the shrubs introduced by the Arboretum in recent years give greater promise of usefulness and popularity in northern gardens. It is in the Shrub Collection, but the best plant in the Arboretum now in full bloom is on Hickory Path near the Pecan tree.

Bush Honeysuckles. For northern gardens there are no more beautiful shrubs than some of the Bush Honeysuckles, with their myriads of yellow, white, rose color or red flowers which in summer or autumn are followed by lustrous, usually scarlet fruits. Many of these shrubs are able to show their greatest beauty in this climate, but this can be obtained only by planting them in rich soil and with sufficient space for free growth in all directions. In poor soil and when crowded by other plants they are usually miserable objects. The large growing kinds like the different forms of *L. tatarica*, *L. bella* and its varieties with white and with rose-colored flowers and *L. notha* should be planted as isolated specimens at least twenty feet from any other plant. *L. Morrowi*, a plant of the Amoor region in eastern Siberia requires even more space, for its lower branches which cling close to the ground naturally spread over a great area. This shrub has gray-green foliage, comparatively large white flowers and bright red fruits. It is one of the most useful of the early introductions of the Arboretum into the United States and has been largely planted in the Boston parks. Like many other Bush Honeysuckles *L. Morrowi* hybridizes easily with other species, and most of the plants raised from seeds, now sold by American nurserymen as *L. Morrowi* are hybrids of that species with *L. tatarica* and are erect growing plants of little value for those who want plants with the peculiar habit of *L. Morrowi*. Among less vigorous growing plants attention is called to two hybrids of *L. Korolkowi* in the collection, *L. amoena* and *L. Arnoldiana*. These have small gray-green foliage and small, bright pink and very attractive flowers, and are hardly surpassed in grace and beauty by any honeysuckles in the collection.

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HARVARD UNIVERSITY



BULLETIN

OF

POPULAR INFORMATION

JAMAICA PLAIN, MASS.JUNE 8, 1915

Rhododendrons. In the Bulletin issued April 28th attention was called to the damage which the Rhododendrons in the Arboretum had suffered during the winter, and it was suggested that it was caused by the severe drought of the autumn, followed by the unprecedented drought of March and early April, and not by cold which had not been exceptional. The Arboretum Rhododendrons certainly suffered from drought, but dryness alone will hardly account for such a destruction, for in other places near Boston plants in much drier and more exposed positions than those in the Arboretum are reported to have come through the winter uninjured. Some of the plants which were killed here have been twenty-five or thirty years in the country. These plants were grafted on *Rhododendron ponticum*, a plant which is not hardy here and is therefore not a suitable stock for Catawbiense hybrid Rhododendrons to be grown in this climate. It is well known that these old grafted plants often lose large branches from what gardeners call "canker," and it is not impossible that the old plants killed in the Arboretum have been gradually failing for several years from the influence of the stock on which they had been grafted, and were therefore susceptible to extreme climatic conditions. This view is borne out by the fact that when plants of a particular kind were killed and others of the same kind were not killed it was always the oldest and largest plants of the variety that suffered. It has generally been supposed that it was the cross with *R. arboreum* and other Indian species which has made so many of the varieties of *R. catawbiense* tender in this climate, but some of the varieties which show in their bright red flowers this influence, like *Atrosanguineum*, *Charles Dickens*, and *H. W. Sargent* are uninjured, while many of the pale-flowered kinds like

Lady Grey Egerton, Mrs. H. S. Hunnewell and Delicatissimum have been killed. The last is a hybrid between *R. catawbiense* and *R. maximum*, and for the last thirty years has been considered one of the hardiest and most desirable of the Rhododendrons which have been planted in New England. Plants of the following Catawbiense varieties have been killed in the Arboretum, but of the varieties marked with a star one or more, but not all the individuals in the collection, have been killed. On many plants which have not otherwise suffered the buds have been killed or injured. *Adolf, Alarich, Albin, Alfred, *Atrorubrum, *Bismarck, Bluebell, *Butlerianum, Circe, Daniel, *Delicatissimum, *Diana, Duchess of Connaught, Earl of Shannon, Egge, Elysium, Fee, *F. L. Ames, *F. B. Hayes, *Hanna Felix, Herkules, Jay Gould, *King of the Purples, *Lady Grey Egerton, Madame Wagner, *Marquis of Waterford, Mum, *Mrs. Harry Ingersoll, Mrs. H. S. Hunnewell, Mnemoisyne, *Prometheus, *R. S. Field, Salmonum roseum, Sir H. Haverlock.

Rhododendron caucasicum. On the whole the different forms of *R. caucasicum* have come through the winter in comparatively good condition. The plants of the varieties Cleo and Ochroleucrum have been killed, and the flower-buds of a few others have suffered. The following varieties, however, are uninjured or have suffered only slightly: Boule de Neige, Coriaceum, Jacksonii and Mont Blanc.

The Rainfall of Recent Years. Whatever may have been the cause of the death this spring of so many Rhododendrons the small rainfall of the last seven years must account, at least in part, for the generally poor condition of Rhododendrons in eastern Massachusetts, for the death in this part of the country of many old Oaks and other native trees in the woods, and for the great number of dead branches on many native Ash trees, even on young trees which should be healthy and vigorous. It is interesting, therefore, to study in this connection the statistics of the rainfall in recent years on the watershed of the Sudbury River in Massachusetts, about twenty miles from Boston. For the following figures the Arboretum is indebted to Mr. Desmond Fitzgerald of Brookline. During the years 1875-1903, inclusive, the average rainfall on the Sudbury basin was 46.34 inches; from 1904-1914 the annual average rainfall was, however, only 40.79 inches, or an annual deficit of 5.55 inches. During the seven years from 1908-1914 the annual average was only 39.24 inches, or an annual deficiency of 6.76 inches as compared with the period from 1875 to 1907, that is, the loss of rain in the past seven years is rather more than the entire rainfall of one normal year; and, moreover, in these seven years there has not been a single year of normal rainfall.

Rhododendrons in the United States. In some years, when conditions are comparatively favorable, Rhododendrons flourish in this climate; in other years when conditions are less favorable they suffer. Compared with these plants as they grow in England and Scotland Rhododendrons are never really successful here. This is not a climate for Rhododendrons, that is for the sort of Rhododendrons European nurserymen usually propagate and send to this country. It is true

some of them can be kept alive here for a great many years but they require special care. The soil in which they grow best has to be specially prepared for them; they require shelter from the sun of early spring, and a great deal of moisture. Of late years they have suffered terribly from the attacks of the lace-wing fly which turns the leaves brown and makes them fall prematurely, thus weakening the plant. Rhododendrons, like many other plants of the Heath Family, cannot grow in soil impregnated with lime; they are not hardy very far north of Boston, and south of Philadelphia, except in the elevated regions of the interior, it is too hot for them in summer, so that the region in the eastern states where these plants can be grown at all is not a large one. Here in eastern Massachusetts there are only four species of broad-leaved evergreen Rhododendrons which are perfectly hardy; these are the native *R. maximum*, *R. catawbiense* from the high slopes of the southern Appalachian Mountains, *R. carolinianum* from the same region, and *R. Smirnowii* from the Caucasus, and if we can hope for a race of hybrid Rhododendrons better suited to the conditions of the New England climate than any we now possess, it will be obtained by mingling the blood of these four species and by excluding entirely the blood of the Himalayan species to which the garden Rhododendrons of Europe owe a large part of the brilliancy of their flowers.

Rhododendron Smirnowii. This is a plant from which a good deal may be expected. It has been growing in the Arboretum for several years and has not suffered from cold or drought. When, however, the plant is fully exposed to the sun the leaves often droop and their edges infold, and it does better in partial shade. The leaves are pale grayish green above and below are thickly covered with pale felt which successfully protects them from the attacks of the lace-wing fly. The flowers are of good size and of pleasant shades of pink or rosy pink, and are borne in large clusters. As compared with the dark green leaves of *R. catawbiense* those of this plant are less attractive, but the flowers are much more beautiful in color and are equally large. Several hybrids of *R. Smirnowii* with varieties of *R. catawbiense* have been raised in Europe, and there are a few of these in the Arboretum collection. They have proved to be good garden plants here, flowering earlier than *R. Smirnowii* and producing larger pink flowers; they have never been injured in the Arboretum, but as there is only a trace of the felt left on their leaves they will probably suffer from the lace-wing fly. *Rhododendron carolinianum* is said to have suffered last winter in a few places near Boston, but it was uninjured in the Arboretum and in several other Massachusetts gardens. It is the most beautiful of the dwarf small-flowered Rhododendrons which can be grown in this climate and may prove valuable to cross with other species. It has now been out of flower for more than two weeks. *Rhododendron Smirnowii* is now at its best. The flowers on *R. catawbiense* are just opening, and those on *R. maximum* will not be out for another fortnight. The flowers of a few of the Catawbiense hybrids are in bloom but most Rhododendrons are late this year, and many of them are only beginning to show the color of their flowers through the opening bud-scales.

Late-flowering Lilacs. Several late-flowering Lilacs are now attractive. The best known of these is probably *S. villosa*, a large shrub from northern China with rose-colored pink or nearly white, bad-smelling flowers; it was introduced into the Arboretum from Peking in 1882 and has been largely planted in this part of the country. It flowers very freely and is a first-rate garden shrub valuable for its late flowers which prolong the season of Lilac bloom. Forms of the hybrid (*S. Henryi*) between this species and the Hungarian *S. Josikaea* are also in flower. The handsomest of these hybrids, called *S. Lutèce*, is a good garden plant with the bluish-purple flowers of its Hungarian parent and the habit of *S. villosa*. Another late-blooming lilac, *Syringa Julianae*, a native of western China where it was discovered by Wilson in 1901, promises to be a good addition to garden Lilacs. It is related to *S. pubescens* and the flowers, like those of that species, are small and fragrant; they differ from those of other Lilacs in the deep purple color of the outer surface of the corolla-tube. This is the color, too, of the stalks of the inflorescence and of the individual flowers, while the inner surface of the lobes of the corolla is white, so that as the flowers open the inflorescence is purple and white. This Lilac, like every other species of Lilac now in cultivation, is perfectly hardy here and the Arboretum specimen is now covered with flowers. Another Chinese Lilac, *Syringa microphylla*, is in flower for the first time in America; it is a plant with small leaves, and small, pale pink, fragrant flowers resembling, except in color, those of *S. pubescens*.

Syringa Wolfii. The handsomest, however, of all the late-flowering Lilacs is *S. Wolfii*, a native of Mongolia. This plant reached the Arboretum from St. Petersburg in 1906 and before it had received a name. It is related to *S. villosa* which it resembles in its foliage, but it appears to be a larger and more vigorous plant. The small, dark blue-purple or rose-purple flowers are borne in clusters which on vigorous plants are sometimes two feet long or more and a foot in diameter, and are produced in the greatest profusion. By many persons it is considered the handsomest of all the species of Lilacs, and certainly no other Lilac is more vigorous or produces such great clusters of flowers. The flowers, however, lack the fragrance of the common Lilac and of several of the Chinese species.

Laburnum alpinum. The large plant of the so-called Scotch Laburnum is now in bloom near the entrance to the Arboretum from the Forest Hills Gate. It is a hardier plant in this country than the better known *L. vulgare*; it flowers about two weeks later than that tree, and its bright yellow flowers are borne in longer clusters. This is the handsomest yellow-flowered large shrub or small tree which can be grown successfully in New England, and it is surprising that a plant of this character which is so generally cultivated in Europe should remain so little known in this country. A hybrid between this species and *Laburnum vulgare*, called *L. Parkii*, has been in flower on Hickory Path near Centre Street; it is a small and perfectly hardy tree.

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BULLETIN

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Yellow-flowered Roses. Among wild Roses with yellow flowers are a few hardy plants which are not often seen in American gardens. There are five species of single yellow-flowered Roses which are found only in the region from the Caucasus to the Himalayas, in central Asia and in western and northern China. Among all the Roses of North America, Europe (except the Caucasus), Siberia and Japan, there is not a wild yellow-flowered Rose although some varieties of the Scotch Rose, *R. spinosissima*, have flowers more or less tinged with yellow, like the variety *hispida*, which has been covered with pale yellow flowers in the Shrub Collection this year, and Harison's Yellow Rose which was raised by Mr. George Harison of New York about 1830 and is believed to be a hybrid between the Scotch Rose and the Austrian Briar. It is a very hardy, free-growing and vigorous plant, and never fails to produce large crops of pale yellow semi-double flowers. It was a very popular plant at one time in the northern states, and it is still found in most old-fashioned gardens.

One of the yellow-flowered Roses, *R. simplicifolia*, from Persia is not hardy. Of the four species which are hardy here *Rosa Hugonis* from western China is the earliest to bloom, and has been described in an earlier issue of these Bulletins. In the Arboretum the flowers are larger than those of the other yellow-flowered species and the plants are more vigorous and flower more freely. Judging by the plants in the Arboretum which have been growing here for several years this will be a valuable garden plant for the northern states. The next species to flower here, *R. Ecae*, is a very spiny shrub with small leaves and pale yellow flowers not more than an inch in diameter. It is a native of Afghanistan, where it is common on dry moun-

tain ridges, and of Samarkand and although of some botanical interest it has little to recommend it as a garden plant in this region. In 1820 an English botanist found in a collection of Chinese drawings in London the picture of a double yellow Rose to which he gave the name of *R. xanthina*, and many years later the single-flowered form of this Rose was found growing wild in Mongolia by the French missionary David. English botanists have usually confused this Chinese Rose with *R. Ecae* and it apparently had not been cultivated in the United States or Europe until 1908 when the Arboretum received from the Department of Agriculture seeds of this Rose gathered in China by its collector, Mr. F. N. Meyer. Both the single and double-flowered forms were raised from this seed and have flowered in the Arboretum this year. The flowers are larger than those of *R. Ecae* and bright clear yellow. These Roses appear to be perfectly at home in the Arboretum, but it is too soon to speak of their value in North American gardens. The single and the double-flowered varieties are much cultivated in the gardens of Peking. The last of the hardy yellow-flowered Roses, the so-called Austrian Briar, has suffered from too many names. Among others it has been called *R. eglanteria* and *R. lutea*, but its oldest name by which it must be known is *R. foetida*, an unfortunate name given to it because the flowers have a slight odor which some persons do not find pleasant. Although long known in gardens as the Austrian Briar, it is probably nowhere a native of western Europe but an inhabitant of the Crimea, the Caucasus, Persia, and probably central Asia. It has handsome bright yellow flowers and when it grows well is one of the most beautiful of all single-flowered Roses, but in this climate it does not always succeed and the plants are usually short-lived. It has never flowered better, perhaps, in the Arboretum than it has this year. The Copper Austrian Briar, which has the petals yellow on the outer surface and dark copper color on the inner surface, is believed to be a variety of *R. foetida* (var. *bicolor*). In this climate this handsome plant is usually short-lived and is not a very satisfactory garden plant. There is a double-flowered variety of *R. foetida* in the collection (var. *persiana*), known as the Persian Yellow Rose. This plant was sent to England from Persia in 1838 and is sometimes cultivated in American gardens. The flowers are more beautiful than those of the Harison Rose, but in this climate it does not grow so vigorously.

Kolkwitzia amabilis. This native of western China is the only representative of a genus which is related to *Diervilla* and *Abelia*, and although it reached the Arboretum in 1908 it is now flowering for the first time. The flowers are borne in pairs on long stems at the ends of short, lateral, leafy branchlets an inch long with a two-lobed oblique corolla deep rose color in the bud, becoming paler after opening, the inner surface of the three divisions of the lower lobe being white blotched with orange color at the base. *Kolkwitzia* is an erect growing shrub with slender stems and branches and is apparently perfectly hardy. The Arboretum specimen is now nearly six feet high and can be seen covered with flowers in the Shrub Collection between the Honeysuckles and the *Diervillas*.

Abelia Engleriana. Abelia is a genus of small shrubs related to *Diervilla* and *Lonicera* with small oblique flowers in pairs. *Abelia grandiflora*, which is believed to be a hybrid, is much grown in the middle and southern states, and although it usually suffers at the north plants in sheltered positions in the Arboretum often flower. *Abelia Engleriana*, a native of western China, appears to be much hardier and promises to be a useful small plant for the borders of shrubberies. The flower is three-quarters of an inch long, the corolla light rose color on the outer surface and very pale yellow on the inner surface with conspicuous yellow blotches at the base of the lobes of the lower lip. In size, shape and color the flowers have a strong resemblance to those of *Kolkwitzia amabilis*.

Syringa reflexa. This is perhaps the most distinct of the Lilacs discovered by Wilson in western China. It is a stout and vigorous shrub, with foliage which in general appearance resembles that of *S. villosa*. It flowers freely and the narrow flower-clusters, which are nine or ten inches long, arch downward from near the base. The plants are perhaps handsomest before the flower-buds open, for these are bright red and more conspicuous than the open flowers which are pale rose color. It appears to be perfectly hardy and gives promise of being a first-rate garden plant.

Syringa tomentella, another of the west China species, is also flowering well this year. The flowers, which are produced in large loose clusters, are longer and more slender than those of *S. reflexa* and are of the palest rose color. The foliage, like that of most of the new Chinese species, resembles that of *S. villosa*.

Styrax japonica. Attention is called to the group of these plants on Hickory Path where they are perfectly at home, although in other parts of the Arboretum they have not proved entirely hardy. This is one of the handsomest of the species of this handsome genus, and every year at this time these plants are covered with white flowers hanging down from the branches on long slender stalks. That it is perfectly at home in this position is shown by the fact that hundreds of seedlings spring up every year under the old plants.

Dwarf Buckeyes. In a bed in the Horsechestnut Group, which is on the right-hand side of the Meadow Road entering from the Jamaica Plain Gate, the new shrubby *Aesculus georgiana* with its short compact clusters of red and yellow flowers has been in bloom again this year and has proved itself a fine plant in this climate. With it is blooming one of the southern scarlet-flowered Buckeyes, *Aesculus discolor*, var. *mollis*, sometimes found in books under the name of *Aesculus austrina*. This is a common and widely distributed shrub or small tree from Georgia to Texas and southeastern Missouri, and is the only red-flowered Buckeye found in the territory west of the Mississippi River. Long overlooked or confounded with other species by botanists, it has only recently been brought into gardens. It is one of the handsomest flowering plants of the southern states, and it is fortunate that it is able to flourish in the Arboretum where it has now been growing for the last ten years.

Aesculus Harbisonii is also in this group. This shrub is the last of the Horsechestnuts and Buckeyes in the collection to unfold its leaves, which do not appear until those of most of the other trees and shrubs of this family are nearly full grown and, with the exception of *Aesculus parviflora* is the last of the group to flower. Two plants sprang up in the Arboretum nursery ten years ago among seedlings of *Aesculus georgiana*, and the mixture of glands and hairs on the petals of the flowers show that it is a hybrid between species belonging to different sections of the genus, no doubt *A. georgiana*, and *A. discolor* var. *mollis*, which also appeared among these seedlings. Whatever its origin *A. Harbisonii* is a good garden plant which has proved itself perfectly hardy in the Arboretum where it has flowered now regularly for three years. The stem and branches of the flower-cluster and the calyx of the flower are rose color, and the petals are canary yellow slightly streaked with red toward the margins; the lateness of their appearance adds to the value of these shrubs which are now three or four feet high and covered with flowers.

Sophora vicifolia. There are not many shrubs with blue flowers which are hardy in this climate and none of them are as satisfactory as this *Sophora*, which is a native of central and western China where it is a common undershrub in dry hot valleys. In the Arboretum it is a shapely plant about four feet high and perfectly hardy; it produces its small blue and white pea-shaped flowers in great profusion and blooms every year. It is one of the most attractive of the small shrubs of recent introduction. It can be seen on Hickory Path near Centre Street.

Some species of Mock Orange (*Philadelphus*) are already flowering. The earliest to bloom in the collection are *P. Schneekii*, var. *Jackii*, a plant discovered by Mr. Jack in Korea a few years ago, and *P. hirsutus* from the southern Appalachian region. The former is a dwarf shrub with erect stems and rather small flowers, and is chiefly valuable for its earliness. *P. hirsutus* is also a small-flowered species and in cultivation is a large, loose-growing shrub of unattractive habit. There is a large collection of species, varieties and hybrids of *Philadelphus* in the Arboretum; they are planted in the Shrub Collection and in a supplementary collection forming a large group on the Bussey Hill Road opposite the Lilac Group. Many useful hardy shrubs with beautiful flowers are found among these plants which will be in bloom now for several weeks and will repay a careful study by persons interested in such plants.

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JAMAICA PLAIN, MASS.JUNE 21, 1915

Viburnums of Western Asia. In discussing these plants it must be remembered that none of the beautiful evergreen species of southern Japan and southern China which are sometimes seen in the gardens of the southern states are hardy in New England. The one exception is *Viburnum rhytidophyllum* from western China. This plant can be kept alive here in sheltered positions, but it always suffers from cold which disfigures and sometimes kills the foliage and prevents it from flowering; and its only interest from the gardener's point of view is in its ability to exist in New England. It is now possible to judge of the value of most of the deciduous-leaved species of China and Japan as garden plants for the northern states, for nearly all of them are well established in the Arboretum. Speaking generally, they are less valuable here than the species of eastern North America, among which are some of the handsomest shrubs and small trees which can be grown in New England. In speaking of American *Viburnums* it must be understood that we are talking about them in eastern America, and that in Europe these plants do not flower as they do here, and rarely if ever produce the great crops of fruit which make them wonderful objects in autumn. This statement of the comparative value here of the species of eastern North America and of eastern Asia as garden plants is a general one, for among the Asiatic species are several plants of great ornamental value. In the species of the *Opulus* Group the sterile flowers which form a ring round the inflorescence are larger on *V. Sargentii*, the Asiatic representative, than on the American and European species of this group, and as a flowering plant it is the handsomest of the three. The fruits, however, are smaller and of a duller color than those of the other species, which are both much more beautiful in the autumn. The Korean *C. Carlesii*, which has been described in an

earlier issue of these Bulletins (No. 2), has no particular beauty of habit or of foliage, but has few rivals in the beauty of its fragrant flowers. The handsomest, however, of all the Asiatic Viburnums is *V. tomentosum*, a native of both Japan and western China. In Japan it grows to the size of a small tree, but in this country it is a large shrub with wide-spreading horizontal branches on the upper side of which the flat flower-clusters are thickly placed and are surrounded by a ring of pure white ray flowers. The fruit when fully grown is bright scarlet at first and becomes black at maturity. This is one of the handsomest shrubs which has been brought from eastern Asia into our gardens. There is a Japanese form in the collection with narrower leaves, var. *lanceolatum*, and two "Snowball" forms. The more common of these is a large, vigorous and hardy shrub which is covered every year with small compact heads of white sterile flowers. It usually appears in gardens and garden-catalogues as *Viburnum plicatum*, but the correct name for this plant is *V. tomentosum*, var. *dilatatum*. The other Japanese Snowball is a dwarfer plant and flowers here about two weeks earlier than *V. plicatum*. The name for it is *V. tomentosum*, var. *dilatatum*, forma *rotundifolium*. The Chinese Snowball, *V. macrocephalum*, forma *sterile*, has pure white sterile flowers in larger heads than those of the other Snowballs. It was introduced into England from Chinese gardens many years ago, and although hardy and free-flowering here, it is not a vigorous or long-lived plant. The type of this species is not in the Arboretum. *Viburnum Sieboldii*, a native of Japan, is a treelike shrub or small tree which sometimes grows to the height of thirty feet. This plant has light green lustrous leaves, round and broadest at the apex, with prominent veins, and when crushed an exceedingly disagreeable odor. The flowers are produced in large clusters and the fruit, like that of *V. tomentosum*, turns from bright red to black after it is fully grown. *Viburnum Sieboldii* is a fast-growing and perfectly hardy plant, and one of the best of the Asiatic species in this climate. A handsomer plant is *V. dilatatum*, which is widely distributed in Japan and grows also in Korea and western China. It is a large and shapely shrub with broad flat clusters of perfect flowers which are followed by large clusters of small bright red fruits, which make it a desirable plant for the decoration of the autumn garden. It is one of the last of the Asiatic species to flower in the Arboretum, and is now covered with its handsome flower-clusters. *Viburnum Wrightii*, a Japanese species, is only valuable for its bright red fruits which are larger than those of *V. dilatatum* and make it conspicuous in autumn. *Viburnum burejaeticum* from eastern Siberia and *V. erosum*, a native of Japan and Korea, are well established in the Arboretum but have little to recommend them as garden plants, and this is true of the six or seven species from western China discovered by Wilson which are hardy here. The best of them, perhaps, is *V. theiferum*; this is a stout and vigorous narrow shrub with erect stems, small flower-clusters and red fruits. This plant has some economic interest, too, as an infusion of the leaves furnished the "sweet tea" used by the monks in the monasteries on Mt. Omei, one of the five sacred mountains of China. Of the western Chinese species *V. Veitchii* has the handsomest foliage which resembles that of the Traveler's Tree, *V. Lantana*, and retains

its bright green color and does not fall until after that of other *Viburnums* has disappeared. This shrub has not yet flowered in the Arboretum. *Viburnum furcatum* from Japan and Korea is closely related and resembles the North American Hobblebush or Moosewood, *V. alni-folium* often called *V. lantanoides*. The Japanese plant is growing in the Arboretum but has not yet flowered here. It is as handsome a plant as the American species, and will probably prove equally difficult to manage.

A Handsome Chinese Rose. In 1804 a Rose reached England from China and when it flowered was found to have small, clustered, double pink flowers. It soon found its way to France and in 1821 received the name of *R. multiflora carnea*. Redouté made it the subject of one of his graceful Rose portraits in *Les Roses*, the most beautiful of the many books devoted to Roses. In 1817 another of the double red or pink flowered multiflora Roses was sent from China to England and then to France. This plant received there the name of *Rosa multiflora platyphylla* and its portrait was also painted by Redouté. It was called in England the "Seven Sisters Rose" and soon became a popular garden plant in Europe and the United States. Now it has almost disappeared from gardens, having been replaced by the Rambler Roses of more recent introduction. The Crimson Rambler Rose, which is now one of the most popular Roses in the northern United States, is evidently a selected form of *R. multiflora platyphylla* and has been widely cultivated in China probably for centuries. From China it reached Japan, and in 1878 came from Japan to England. *Rosa multiflora* itself, which is a Japanese species with large clusters of small white single flowers, has been known to botanists since 1784 but did not reach England until about 1875. Seeds of this Rose were sent, however, from Germany a year earlier to the Arboretum where it has been largely used in the production of hybrid Rambler Roses. Nothing was known of the origin of the double pink and red-flowered Chinese multiflora Roses until 1897 when a French missionary, the Abbé Farges, sent from western China to Monsieur Maurice L. de Vilmorin seeds of a Rose which turned out to be a single pink-flowered *R. multiflora*, and certainly the plant from which they had been derived. A portrait of this plant in flower appeared in 1904 in the catalogue of the Fruticetum Vilmorinianum, but it was not named and seems to have been lost sight of. Wilson found it in western China where it is very common, and collected seeds. William Purdom, also collecting for the Arboretum in Shensi in 1909, sent seeds here of this single-flowered Rose and the plants raised from these seeds are now flowering in the Arboretum for the third year. This Rose is now to be called *R. multiflora*, var. *cathayensis*; it is a hardy, vigorous, and handsome plant with the habit of the Japanese *R. multiflora*. The flowers are from two to two and a half inches in diameter and are produced in large, many-flowered clusters, and the large, conspicuous, bright yellow anthers add to the beauty of the clear pink petals. This Rose may well become a popular garden plant. It offers possibilities which the hybridist will undoubtedly take advantage of; and it is of considerable historical interest as the wild original of garden plants cultivated probably for centuries by the Chinese and known in Europe and America

for more than a hundred years. Plants covered with flowers and flower-buds can be seen with the other Chinese Roses in the Chinese Shrub Collection on the southern slope of Bussey Hill.

Syringa Sweginzowii. This year this has been the last of the true Chinese Lilacs to flower. The leaves are dark dull green and sharply pointed, and the flowers are borne in long narrow clusters with dark red slender stems and branches; they are delicately fragrant, half an inch long, with very slender corolla-tubes, and are flesh color in the bud, becoming nearly white after the buds open. Like the other Chinese species, it is perfectly hardy, grows rapidly, flowers freely even as a small plant, and is well worth a place in a collection of Lilacs.

The Tree Lilacs. No plants are now more conspicuous in the Arboretum than the Tree Lilacs. There are three species of this group, *S. amurensis*, *S. pekinensis*, and *S. japonica*. The first is a native of eastern Siberia and is a small tree with flat, spreading or slightly drooping clusters of white flowers. *S. pekinensis*, a native of northern China, is a shrub rather than a tree, although it sometimes reaches the height of thirty feet, with numerous stout stems pendant at the ends and covered with bark peeling off in thin layers like that of some of the Birch trees. The flower-clusters are flat, unsymmetrical, half drooping, and are smaller than those of the other species. *S. japonica* is a native of the forests of northern Japan, and is the last of the three species to flower; it is a tree often thirty or forty feet high with a tall stout trunk covered with lustrous bark like that of a Cherry tree, and a wide, round-topped head. Like the other species of the group, it loses its leaves in the autumn without change of color. These three plants can be seen on the bank in the rear of the Lilac Group on the left-hand side of the Bussey Hill Road.

Halimodendron argenteum. This shrub, a native of Siberia, is now covered with pale rose-colored, pea-shaped, fragrant flowers, which are borne in short clusters, and their delicate beauty is heightened by the light color of the leaves which are clothed with a pale silky down. The plant remains in flower during several weeks, and is one of the handsomest of the early-summer flowering shrubs in the Shrub Collection.

Evodia Henryi. This tree from western China is flowering here for the first time. It belongs to a genus related to *Phellodendron*, and is widely spread over eastern Asia, extending to Australia and Madagascar. Like *Phellodendron*, it has pinnate leaves, and small, unisexual flowers in small clusters terminating the shoots of the year, and, like *Phellodendron*, *Evodia* is aromatically scented in all its parts. It differs from that genus, however, in the fruit which is a dry capsule and not a berry, and in its exposed axillary buds, those of *Phellodendron* being covered by the bases of the leaf stalks. *Evodia Henryi* is a small tree with dark green, lustrous leaves and small pink flowers, and is an interesting addition to the list of trees which can be successfully cultivated in this climate.

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ARNOLD ARBORETUM

HARVARD UNIVERSITY



BULLETIN

OF

POPULAR INFORMATION

JAMAICA PLAIN, MASS.JUNE 28, 1915

Philadelphus. In 1811 English gardeners cultivated only two species of *Philadelphus* and twelve years later botanists recognized only eleven species. There are now established in the Arboretum some thirty species and a large number of varieties and hybrids. All these plants, popularly called *Syringas*, are easy to manage, demand no special care, and suffer less from the attacks of insects than most trees and shrubs. They flower freely year after year, their flowers are often very fragrant, and in rich well-drained soil the plants live for many years. Some of the species can grow under the shade of overhanging trees, and flower in such situations more freely than almost any other shrub. The beauty of these plants is found in their white flowers; the fruit, which is a dry capsule, has as little beauty as that of a Lilac. There is nothing distinct or particularly interesting in the habit of the plants of any of the species, and the leaves fall in autumn without brilliant coloring. As flowering plants not many shrubs, however, surpass them in beauty, and their value is increased by the length of the flowering season which extends in the Arboretum during fully six weeks. Some of the species hybridize freely and several of the handsomest of these plants are hybrids. One of the first of these hybrids to attract attention was raised in France before 1870 by Monsieur A. Billard; it is known as *Philadelphus insignis* and sometimes is called *Souvenir de Billard*. It is one of the handsomest of the large-growing *Syringas*, and the last or nearly the last to bloom in the Arboretum, for the flowers will not be open for another fortnight. A hybrid probably between *P. grandiflorus* of the Appalachian Mountain region with a species from our northwest coast appeared in the Arboretum a few years ago and has been named *P. splendens*; it is a large and vigorous

shrub with unusually large flowers, and during the past week has been one of the handsomest *Syringas* in the collection; the flowers are without perfume. *Philadelphus maximus*, a supposed hybrid between *P. latifolius* from the southeastern United States, and *P. tomentosus* from the Himalayas, grows to a larger size than any of the other *Syringas*. It is not rare in old Massachusetts gardens in which plants from twenty to thirty feet high can occasionally be seen. The crossing about thirty years ago in France by Lemoine of *P. coronarius* with *P. microphyllus* produced an entirely new race of *Syringas* which has proved to be one of the best additions to garden shrubs that has ever been made. The first plant obtained by this cross is called *Philadelphus Lemoinei*; it is a perfectly hardy shrub four or five feet high and broad, with slender stems which bend from the weight of countless flowers; these are intermediate in size between those of the two parents and retain the fragrance of *P. microphyllus*. There are at least a dozen distinct forms of this hybrid made by Lemoine, varying considerably in the size of the plants and of the flowers, and in the time of flowering. One of the handsomest, perhaps, is called *Candélabre*; this is a very dwarf plant with flowers larger than those of either of its parents and an inch and a half wide, with petals notched on the margins, and without the perfume of its parents. Other distinct forms equally hardy and beautiful are *Avalanche*, *Boule d'Argent*, *Bouquet Blanc*, *Erectus*, *Fantasie*, *Gerbe de Neige* and *Mont Blanc*. The Mock Orange of old gardens, *Philadelphus coronarius*, a native of southeastern Europe and the Caucasus, was cultivated in England in 1596 and was probably one of the first shrubs brought to America by the English settlers. It is a shapely hardy shrub able to bear a good deal of neglect and abuse, and chiefly valuable for the fragrance of the flowers which are smaller than those of many other species and faintly tinged with yellow. Several forms of this plant are in the collection. None of them, however, are of particular beauty or interest, and one of them with double solitary flowers is as ugly as it is possible for a *Syringa* to be. Among the species none is perhaps more interesting than the Rocky Mountain *P. microphyllus*, one of the parents of the Lemoine hybrids. It is a compact shrub three or four feet high and broad with leaves not more than half an inch long and smaller flowers than those of any other *Philadelphus* in cultivation and rather less than three-quarters of an inch in diameter; their fragrance is not surpassed by that of any plant in the collection. The most beautiful of the species of recent introduction, *P. purpurascens*, is a native of western China, where it was discovered by Wilson. It is a shrub with long arching branches, from which rise numerous branchlets spreading at broad angles and from four to six inches long; these bear the flowers on drooping stalks from near the base to the apex and give to the plant when it flowers a different appearance from that of any of the other species. The flowers have a strong pungent and delightful odor and are an inch and a half in diameter with a purple calyx and pure white petals which do not spread like those of many of the species but form a bell-shaped corolla. It is the handsomest of the Old World species, and an addition to garden plants of first importance. It is interesting that the handsomest of the American species, *P. indorus*, was one of the first *Syringas* cultivated in Europe where it arrived about the middle of the eighteenth

century. It is a large shrub with arching branches, and large, solitary, pure white, cup-shaped, scentless flowers. This beautiful plant is not now very often seen in gardens. It is impossible in this bulletin even to mention all the species, varieties and hybrids of *Philadelphus* in the collection which is now one of the most complete in the Arboretum. It will well repay a careful study by persons interested in handsome garden shrubs and in the effects of hybridization, natural or intended, in this genus.

A new Chinese Rose. From the seeds of a Rose collected by Wilson in western China a new species of the Moschata Group has been raised. It is now flowering in the Arboretum for the third year and is to be named *Rosa Helenae*; it is a vigorous and perfectly hardy shrub with slender, arching stems furnished sparingly with short red spines, and five or six feet high, light green cheerful foliage, and terminal and axillary many-flowered clusters of pure white, delicately fragrant flowers an inch and a half in diameter and borne on short erect branchlets. It is a plant which will be prized by persons realizing that among the wild Roses are some of the most beautiful of all flowering plants and who find a place for them in their gardens.

Magnolia macrophylla. This is the last of the Magnolias in the collection to flower. It is a medium-sized tree with wide-spreading branches, and is distinguished by the fact that of all trees which grow beyond the tropics it has the largest leaves and the largest flowers. The leaves are silvery white on the lower surface, from twenty to thirty inches long and from eight to nine inches wide, and the cup-shaped, creamy-white, fragrant flowers are often a foot in diameter. An inhabitant of the south where it is widely distributed from North Carolina to western Louisiana, this Magnolia is perfectly hardy in New England, but unless it is planted in sheltered positions the trees often become disfigured by the wind which tears the large delicate leaves.

Magnolia glauca. Less showy than *Magnolia macrophylla*, this is a more valuable plant for general cultivation. Often a large tree in the south, at the north *Magnolia glauca* is never more than a small tree, or more often a large shrub. The leaves are dark green and very lustrous on the upper surface and silvery white on the lower surface; the flowers are small, cup-shaped, creamy white and delightfully fragrant, and continue to open in succession from the middle of June until August. In all North America there is not a more delightful shrub to plant in the garden, or one that will give larger returns in beauty and fragrance; yet it is difficult to find it in any quantity in American nurseries, and it is unknown to most American planters of this generation. A hybrid, *M. major*, often called *M. Thompsoniana*, between *M. glauca* and *M. tripetala*, another American species, has the general appearance of *M. glauca* but has larger leaves and larger fragrant flowers. It is with the American Magnolias on the right-hand side of the Jamaica Plain Gate and is now in flower.

Hydrangea petiolaris. The so-called Climbing Hydrangea was introduced into the United States from Japan in 1876 by the Arboretum and is now often seen in Massachusetts gardens. It is usually allowed to climb up the trunks of trees, and it is perhaps not well known that this Hydrangea is an excellent plant for covering brick and stone walls,

to which it is able to attach itself firmly. Short lateral branchlets are developed from the stems; these bear the terminal flower-clusters which are thus brought out from the general surface of the vine and give to the covering of the wall a loose and attractive appearance. Such a plant can now be seen in flower on the Administration Building.

Indigoferas. *Indigofera Kirilowii* is flowering in the Shrub Collection and on Hickory Path near Centre Street. It is a low shrub which spreads rapidly into a broad mass, and produces during several weeks racemes of large pure pink flowers. Introduced a few years ago into the Arboretum by Mr. Jack who found it in Korea, it has proved one of the best plants of its class. Near it on Centre Street *Indigofera amblyantha* is also in flower. It is a plant of entirely different habit, with slender stems, small leaves, and axillary clusters of small rose-colored flowers which continue to appear during two or three months. This is one of the most beautiful of the small shrubs introduced by Wilson from western China where he found it growing on river cliffs in Hupeh at altitudes up to six thousand feet above the sea. Two other species of this genus are established on Azalea Path near its entrance from the Bussey Hill Road, *I. Gerardiana*, a native of the Himalayas, and *I. decora* from southern China. These two plants, although they are killed back to the ground every winter, send up new stems and flower profusely every year. *I. decora*, which is just in bloom, is a handsome plant with racemes of large white flowers.

Late Bush Honeysuckles. In the Shrub Collection two of the latest of these plants are in flower, and are beautiful now and will be still more beautiful later in the season when more of the fruit is ripe. They are *Lonicera Ledebourii* from the Pacific coast region and *L. involucrata*, var. *serotina* from the mountains of the interior of the continent. The long slender flowers of these plants are bright yellow more or less tinged with red and surrounded by large, leaflike, dark red cups which remain under the large, black, lustrous fruit. These plants remain in bloom for a long period, and flowers and ripe fruit can now be found on them. This group of Honeysuckles, of which there are several forms, contains some of the hardiest and most beautiful garden shrubs which have been brought into the Arboretum from western North America, a region which has produced few plants which are hardy in this climate.

Two Andromeda-like Plants. *Leucothoe Catesbaei* and *Lyonia mariana* are now in flower. The former is an evergreen with long, spreading and arching stems clothed with handsome long-pointed leaves, and small clusters of axillary white flowers; it is a native of the southern Appalachian region and one of the hardiest and most desirable of the broad-leaved evergreen shrubs which can be grown in this climate. It requires moist soil and a shady position. It can be seen in large numbers along the brook and in the small ravine at the base of Hemlock Hill. *Lyonia mariana* is a smaller shrub with deciduous leaves and white, racemose flowers borne on leafless shoots. This plant is common in the eastern states from Rhode Island southward, and when cultivated is not particular about soil or situation. There is a mass of these plants now in full bloom on the right-hand side of the Meadow Road in front of the Horsechestnut Group.

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JAMAICA PLAIN, MASS.

JULY 2, 1915

Three Asiatic Poplars. Among the trees which have come from western Asia to the United States are three Poplars which give promise of being valuable in this country. They are hardy, grow rapidly and seem to be less liable to suffer from borers than many other Poplar trees. The first of these trees,

Populus Maximowiczii, is a native of eastern Siberia, Saghalin, and northern Japan. It is the largest tree of eastern Siberia, where it sometimes grows eighty feet high with a trunk three or four feet in diameter and a broad head of massive spreading branches, and in Japan it is only exceeded in size by the *Cercidiphyllum*. The trees in the Arboretum have been growing here several years and are twenty-five or thirty feet high, with smooth, pale brown stems and shapely heads. The leaves are broadest above the middle, very finely toothed, pale green and lustrous above, silvery white below, three or four inches long and two or two and a half inches wide. The fruit which is fully grown in May, unlike that of other Poplars, remains on the trees here until September without opening. Judging from the climate of the region where this Poplar grows naturally, it should be hardy in all the northern states and in a large part of Canada, and a valuable shade tree in regions of extreme cold like northern Minnesota and the Dakotas where it is possible to grow successfully a comparatively few trees of large size. In nurseries *P. Maximowiczii* is often confused with *Populus suaveolens*, another Siberian species, and it is sometimes called in the United States the "Japan Poplar." It is one of the handsomest and most satisfactory trees in the Arboretum collection of Poplars. The second of these Asiatic Poplars,

Populus tomentosa, is a common tree in temple gardens in Peking, in which it grows to a very large size, and is one of the handsomest, perhaps the handsomest of all Poplar-trees. The peculiarity of this tree is that the leaves of young plants and of vigorous shoots are thickly covered below with a coat of white felt which is not found on the leaves of older trees. When it was first discovered it was believed on this account to be the Silver Poplar of Europe, and it was not until the mature leaves were seen by botanists that it was found to be a distinct species. As it grows in Peking *Populus tomentosa* is a tree fully eighty feet high with a tall massive trunk covered with dark, deeply furrowed bark, and a head of erect and spreading branches. The leaves are thicker than those of other Poplars, five or six inches long and four or five inches broad, dark and lustrous above and pale below, and are divided on the margins into broad rounded teeth; they hang on long flattened stalks and, fluttering in the slightest breeze, make, as the blades come together, a noise like drops of rain in a heavy shower falling on a tin roof. Mr. S. Wells Williams, the distinguished Chinese scholar, noted on a specimen of a few leaves of this tree in the Gray Herbarium, that for this reason it is sometimes called in China "the rain tree." *Populus tomentosa* is a hardy tree in the Arboretum where it is growing at the rate of four or five feet a year, and there seems no reason why it should not grow to a large size here. Unfortunately it is one of the few Poplars which cannot be propagated by cuttings and can only be increased by grafting. It is probable, therefore, that it will never become a popular tree in this country unless a cheaper method of increasing it can be found. The third of these Poplars,

Populus Simonii, is a smaller tree, with pale bark, small, slightly and gracefully drooping branches and small pale green leaves pointed at the ends and hanging on slender stalks. This appears to be the commonest of the Poplars of northeastern continental Asia; it is found from the valley of the Amoor River to China, where it is common in the north but exceedingly rare in the western provinces. This is a small, perfectly hardy tree which should be popular in the colder parts of the United States and Canada. Young plants are sometimes fastigiate in habit, with erect branches and smaller leaves, but this habit seems to disappear as the trees grow older.

Rosa caudata. This is a Rose discovered by Wilson in western China. It is one of the Cinnamomae section of the genus, and is a tall vigorous shrub with stout arching stems covered not very thickly with stout spines, dark green foliage, and flowers about two inches in diameter, in wide, sometimes twenty-five-flowered clusters. The beauty of the flowers is increased by the white marking at the base of the pure pink petals. The fruit is orange-red, an inch long, gradually contracted above into a narrow neck crowned by the much enlarged calyx-lobes. This handsome Rose is flowering now for the third year in the Arboretum; it is perfectly hardy and an excellent addition to the Roses of its class. It can be seen in bloom now in the Shrub Collection and with the other Roses in the special Chinese collection on Bussey Hill.

Rosa setipoda. This is another member of the Cinnamomae, differing chiefly from *R. caudata* in the more numerous spines on the stems,

in the shape of the fewer-flowered flower-clusters, and in the presence of gland-tipped prickles on the stalks of the flowers and on the fruit. The flowers in size and color resemble those of *R. caudata*. This Rose was first sent to the Arboretum by Monsieur Maurice de Vilmorin and it has flowered here now for several years. The plants now in bloom were raised from seeds collected by Wilson in western China and can be seen in the Shrub Collection and on Bussey Hill.

Rosa multibracteata. This is a small plant with slender stems covered with numerous small spines, small leaves and innumerable small, pink, solitary flowers which are followed by comparatively large red fruits covered with glandular prickles. This very hardy little Rose was discovered by Wilson in the extreme western part of China, and is flowering this year for the first time in the Arboretum. It is one of the last of the Chinese Roses to open its flower-buds.

Rosa Jackii. This beautiful Rose was introduced into the Arboretum from Korea several years ago by Mr. Jack, and when it flowered was named for him. At about the same time it was named in England *Rosa Bakeri* and *R. Kelleri*, names which cannot be used for it, however, as they had previously been given to other Roses. It is one of the Multiflorae Roses with long stems which lie flat on the ground, lustrous foliage, and pure white flowers two inches or more in diameter, in wide, many-flowered clusters. The flowers are larger than those of the Japanese *Rosa multiflora* and it blooms much later than that species. This Rose is perfectly hardy and a first-rate garden plant. The hybridizer ought to be able to find in it a good subject from which to raise a race of hardy, late-flowering Rambler Roses. It is now in flower in the Shrub Collection where it is labeled *R. Kelleri*.

Sambucus canadensis. As the flowers of the Laurel (*Kalmia latifolia*) begin to fade those on the native Elder (*Sambucus canadensis*) open. This is the last of the native shrubs to make a conspicuous show of flowers in the Arboretum. It is particularly beautiful this year along Bussey Brook in the valley at the northern base of Hemlock Hill where many plants have grown from seeds sown by birds. It is conspicuous, too, about the ponds near the junction of the Meadow and the Forest Hills Roads. Few native shrubs make a greater show than this Elder with its broad heads of white flowers and lustrous black fruits. Growing with it in the Shrub Collection is a form with leaflets deeply divided into narrow segments (var. *acutiloba*). There is also here a form with dull yellow fruit (var. *chlorocarpa*), and a plant which originated a few years ago in a European nursery (var. *maxima*) with flower-clusters three times as large as those of the wild plant, and such large and heavy bunches of fruit that the branches are hardly able to support them. This form flowers ten or twelve days later than the common wild plant.

Rhododendron arborescens. Before the last flowers of the Yellow Azalea of the southern Appalachian Mountains (*Rhododendron calendulaceum*) have fallen those of another Appalachian species (*R. arborescens*) open. This is one of the most beautiful of all the American Azaleas, with large fragrant flowers which, pale rose color in the bud, are pure white as the corolla expands. The long bright red filaments and styles add to the beauty of the flowers. It is a shrub sometimes

twelve or fifteen feet high, with leaves dark green and very lustrous above and pale below, and with an odor when dry of newly mown grass. Sent to Europe more than a century ago it was soon lost from gardens until its reintroduction by the Arboretum in 1880. There is a mass of this *Azalea* on the right-hand side of the Valley Road in front of the Hickories.

***Rhododendron viscosum*.** This is the last of the *Azaleas* to bloom and is just beginning to open its flowers. It is an inhabitant of swamps in the eastern part of the country and is known as the Clammy *Azalea* or more generally perhaps as the Swamp Honeysuckle. As a garden plant it is chiefly valuable for the delightful fragrance of the pure white, long-tubed, clammy viscid flowers and for their lateness. Masses of this plant can be seen in front of the native woods on both sides of the Meadow Road. For more than two months *Azaleas* have now been in flower in the Arboretum, and during this period no other group of plants has given it more of beauty and interest.

***Rhododendron maximum*.** This native species is the last of the *Rhododendrons* with evergreen leaves to flower. It is one of the hardiest of all *Rhododendrons* in this climate, and no other species which can be successfully grown here has such large and handsome leaves. The flowers are white more or less tinged with pink, and are borne in rather small compact heads. They are handsome in their delicate colors, but are overtopped and a good deal hidden by the young branchlets which, unlike those of *R. catawbiense* and of most other species, make their annual growth before the flowers open. The plants of this *Rhododendron* in the group at the base of Hemlock Hill, near the South Street entrance, are now in flower.

***Crataegus cordata*.** This is the last of the Hawthorns to bloom and is now in full flower. It is the so-called Washington Thorn and a native of the southern Appalachian foothills and of the region westward to Missouri. It is a tree sometimes thirty feet high with erect branches, small, nearly triangular, shining leaves which turn bright scarlet in the autumn, small, dull white flowers in small compact clusters, and small fruit which remains on the branches with little loss of color until late spring. The late flowers, the brilliancy of the autumn foliage, and the abundance and brightness of the fruit during the winter months make this one of the most desirable of the American Hawthorns as a garden plant.

***Viburnum Canbyi*.** This is the last of the *Viburnums* to bloom in the Arboretum where its flowers are just opening. It is a native of eastern Pennsylvania and of Delaware, and has recently been found in Indiana; it is the largest and handsomest of the blue-fruited American species of which *V. dentatum* is the best known. It is a plant which is improved by cultivation, and there are great round-topped specimens in the Arboretum twelve or fifteen feet high and broad, and splendid objects at all seasons. Such plants can be seen on the right-hand side of the entrance to the Administration Building and on the Meadow Road. The earliest *Viburnum*, *V. alnifolium*, flowered here the first of May, and from that day to this *Viburnums* have been flowering in the Arboretum.

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POPULAR INFORMATION

JAMAICA PLAIN, MASS.

JULY 9, 1915

Pyramidal Trees. Several of the species of trees of the northern hemisphere have produced individuals with erect growing branches which give them an abnormal fastigiate habit. Such trees are interesting in illustrating the variation in habit of trees, and several of them are valuable when used with discretion to produce certain effects in decorative planting. The best known of these trees is the Lombardy Poplar, a form of the Black Poplar of Europe (*Populus nigra* var. *italica*). Some authors have supposed that this tree originated in one of the countries of western Asia, but it is now more generally believed that it sprang up in northern Italy early in the eighteenth century. The trees are all males and have all been propagated from cuttings; and it is not improbable that all of these trees now scattered over a large part of the world are descended from a single individual. It is a very hardy, fast-growing tree, and is able to adapt itself to very different climatic conditions. Nowhere perhaps can such fine specimens be seen as are now growing in the central valley of Chile, and it is equally at home in all parts of North America. The Lombardy Poplar is a great favorite with some members of the younger school of American landscape gardeners, but fortunately in this part of the country it often suffers severely from the attacks of a borer so that it is not probable that large trees will ever become too common here. There is also a fastigiate form of the Silver Poplar of Europe and western Asia (*Populus alba*, var. *pyramidalis*, but better known as *P. Bolleana*). This tree is a native of central Asia but has become common in the United States and Europe in the forty years since it was first sent to Germany. It is as fastigiate in habit as the Lombardy Poplar, and has the advantage over it in the greater variation, shape and color of

the leaves. There is a Poplar with pale nearly white bark which resembles the Lombardy Poplar in habit and foliage and which has been called *Populus thevestina*. It occurs in Servia, the Crimea and Algeria. The young plants in the Arboretum are hardy and are growing well. One of the narrowest and most remarkable of all these trees is the fastigiate form of the Sugar Maple, *Acer saccharum*, var. *monumentale*, which was found in 1885 in a cemetery in Newton, Massachusetts. There is a good specimen of this interesting tree established in the Maple Collection. It may prove valuable for planting by the sides of narrow roads. There is a form of the Red Maple (*Acer rubrum*, var. *columnare*) in the collection. This is rather broader than the fastigiate Sugar Maple but is a good addition to the list of these plants. The graft from which the Arboretum specimen was raised was obtained in 1889 from the Parsons Nursery on Long Island. Beyond this nothing is known of the origin of this tree. There is also a pyramidal form of the Silver Maple (*Acer saccharinum* var. *pyramidale*). This originated in a European nursery and there are only small specimens in the Arboretum. The only Old World Maple which has produced one of these sports is the Norway Maple (*Acer platanoides*, var. *columnare*). This tree is established in the Arboretum collection and is a broader tree than the American fastigiate Maples. The fastigiate Tulip tree (*Liriodendron Tulipifera*, var. *pyramidale*) is one of the handsomest of these trees; it originated in the nursery of Simon Louis near Metz in Alsace and has been growing in the Arboretum since 1888. There is a good specimen with the other Tulip-trees on the right-hand side of the Meadow Road. The Linden genus appears to have produced but one of these trees, the var. *pyramidalis* of the European *Tilia platyphyllos*. This tree tapers from a broad base to a pointed apex and is pyramidal rather than fastigiate in outline. The fastigiate form of one of the Oaks of western Europe (*Quercus pedunculata*, var. *fastigiata*) sometimes grows in Europe to a large size; it is hardy in this country and grows rapidly, but, like the other European Oaks, it is short-lived here and rarely lives more than thirty or forty years. One of the most interesting of all the fastigiate trees is a European Beech growing at Dawyck, Mr. F. R. S. Balfour's estate in Peebleshire, Scotland. It is a tall and evidently an old tree to which the name of *Fagus sylvatica*, var. *Dawychi* has been given. This tree has recently been propagated by nurserymen and there is a small plant in the Arboretum with the other Beeches near the South Street entrance. There are two fastigiate forms of the European Hornbeam in the Arboretum collection (*Carpinus Betulus*, var. *pyramidalis* and var. *globosa*). The first is pyramidal rather than fastigiate, and the second, in spite of its name, is a dwarf, very compact, fastigiate plant. They are in the Hornbeam Collection on the right-hand side of the Meadow Road opposite the Oaks. There is only one fastigiate Birch, the var. *fastigiata* of the European *Betula pendula* or *verrucosa*. This is distinctly fastigiate in habit, with a narrow head of erect branches. A specimen of this tree may be seen on the Bussey Hill Road with the other Birches. One of the narrowest of all these trees is the fastigiate form of the Scotch Elm (*Ulmus glabra*, var. *fastigiata*) which is sometimes called in England the Exe-

ter Elm, as it was raised in a nursery in Exeter about ninety years ago. This tree has little beauty. More beautiful and interesting is a geographical form of the European *Ulmus nitens* (var. *stricta*). This is the common Elm in Cornwall and some parts of Devonshire, and is usually called the Cornish Elm. It is a tree sometimes eighty feet tall with a trunk occasionally five feet in diameter, with short ascending upper branches and lower branches curving upward. A tree which is often considered now a form of the Cornish Elm (var. *Wheatleyi*) has a similar habit and is usually called the Guernsey Elm. It sometimes appears in nursery catalogues under the name of *Ulmus campestris monumentalis*. The European *Crataegus monogyna* has produced vars. *stricta* and *monumentalis*. The former is a tree with a broad head of erect branches, and can be seen in the old Crataegus Collection next to the parkway wall. The latter, which is a narrower and strictly pyramidal plant, is new in the Arboretum. A fastigiate form of the European Horsechestnut (*Aesculus Hippocastanum*, var. *pyramidalis*) has appeared in a European nursery but is not yet in the Arboretum.

Fastigiate Conifers. In the pinetum are young trees of the White Pine (*Pinus Strobus*, var. *fastigiata*) with erect branches which give the trees a peculiar and distinct appearance. They were raised from grafts taken from a tree which was growing a few years ago near Stamford, Connecticut. The Scotch Pine (*Pinus sylvestris*), which shows a strong tendency to seminal and geographical variation, has also produced a fastigiate form (var. *pyramidalis*). The so-called Swedish Juniper is a narrow, dwarf pyramidal form of the common Juniper (*Juniperis communis*, var. *suecica*). This little Juniper is not very hardy in this part of the country but is often planted in the middle states. The handsomest pyramidal coniferous plant, however, in the Arboretum is a form of *Thuya occidentalis* (var. *pyramidalis*) raised sometime before 1885 by Robert Douglas in his nursery at Waukegan, Illinois. It is a tall narrow plant suited to replace although much smaller of course, the fastigiate Cypress which plays such a part in the decoration of the gardens of southern Europe. This Arbor Vitae is sold in some American nurseries as *Thuya occidentalis pyramidalis Douglasii*. The common Spruce (*Picea Abies*) has produced many abnormal seminal forms and among them are at least two with erect branches (var. *columnaris* and var. *pyramidalis*). A few individuals of these varieties were found many years ago in European forests and the cultivated plants have probably been propagated from these wild plants. Less important are two dwarf pyramidal forms of the European Fir (*Abies Picea*, var. *columnaris*, and var. *pyramidalis*). The Lawson Cypress from the Pacific Coast (*Chamaecyparis Lawsoniana*) is another tree which shows great variation in its seedling offspring. Among them is a distinctly pyramidal form which appeared in an English nursery many years ago and is known as *Cupressus Lawsoniana erecta viridis*. Like all the forms of the Lawson Cypress it is not hardy in the neighborhood of Boston. The so-called Irish Yew, a pyramidal form of the European Yew (*Taxus baccata*, var. *fastigiata*), of which there is a yellow-leaved variety, is a popular garden

plant in all countries where it is hardy. Unfortunately this interesting tree is not able to support the New England climate. This is true of the erect garden form of the Japanese *Cephalotaxus* (*pedunculata*, var. *fastigiata*).

Of these twenty-eight plants with abnormally erect growing branches five in two genera are North American, one only is Asiatic, and twenty-two are European, the Cornish Elm, which is not an abnormal tree but a geographical variety, being omitted. The predominance of abnormal forms among European trees is due, no doubt, to the fact that European trees have been raised artificially from seeds for a longer time and in greater numbers than those from other countries, and that European cultivators of trees have been keener than others to propagate and detect plants of abnormal habit and foliage. It is less easy to explain the absence of fastigate trees from such largely cultivated genera as *Fraxinus*, *Catalpa*, *Prunus*, *Magnolia*, *Salix* and *Tsuga*. Of our common Hemlock in this last genus there are a number of dwarf forms and forms with abnormal foliage, but among them none has yet appeared with erect growing branches.

***Tilia vulgaris*.** As a rule European trees do not grow as well in this part of the country as the native species or those from eastern Asia of the same genus. Many specimens of one of the European Elms have lived in Massachusetts for a number of years, however, and have grown here into large and splendid trees, and the European Beech becomes a better tree than the American Beech when this is transplanted from the forest to the park. One of the European Lindens is another exception to the general rule that native trees are better trees to plant than exotic trees, for the best Lindens that have been planted near Boston are trees of *Tilia vulgaris* which is now in flower. This tree is sometimes also called *T. europaea*, *T. intermedia* and *T. hybrida*, and is considered by some of the best observers of European trees a natural hybrid between the two species of western Europe, *T. platyphyllos* and *T. cordata*. Although widely distributed in Europe, *Tilia vulgaris* appears to be much less common than either of its supposed parents, and the variation in the size, shape and color of the leaves makes its hybrid origin possible. On some individuals the lower surface of the leaves is quite green and on others it is bluish or even whitish, but leaves on different parts of the same branch differ in this respect, and on shoots produced from the bases of old trees the large leaves are quite green. It is a fine, round-headed tree with rather small, somewhat pendulous branches, and appears to have been more often planted in the neighborhood of Boston than any other Linden. There are a number of large specimens on Centre Street near Orchard Street, Jamaica Plain, and in Olmsted Park, and large individuals can be found in all the suburbs of Boston. The young Lindens which have been recently planted on Huntington Avenue and on Louis Pasteur Avenue in Boston are of this variety.

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Cornus Amomum, the Silky Cornel, which has been much used in the Arboretum, has been in flower here for several days. In cultivation it is not a satisfactory plant unless it can be given sufficient room for its wide-spreading branches to extend freely and spread over the ground. When crowded by other plants the branches become erect and it loses its real beauty and value. To be seen at its best this Cornel should have a clear space with a diameter of not less than twenty feet in which to spread. It is well suited for the front of groups of trees and shrubs, and there is no better shrub to plant by the margins of ponds and streams where its long branches can hang gracefully over the water. Its purple stems are attractive in winter, and the bright blue fruits which ripen in the autumn add to the value of this native shrub. In the Cornel Group, at the junction of the Meadow and Bussey Hill Roads, there is a good specimen of this plant, and its value for planting near water can be seen on the borders of the small pond in the rear of the Cornel Group.

Cornus asperifolia. This Cornel flowers a week or ten days later than the Silky Cornel. It is a widely distributed plant from western New England to Texas, and under favorable conditions becomes a tree occasionally forty feet high. At the north, however, it is a tall, broad shrub with erect and slightly spreading branches. The flower-clusters are small but are produced in great profusion and are followed by white fruits. There is a large specimen among the other Cornels near the junction of the Meadow and Bussey Hill Roads.

Cornus paucinervis. It was hardly to have been expected that this Chinese shrub could flourish in New England for it grows naturally not much above the sea-level central China in a climate where the

Orange thrives, and rarely ascends to elevations of three thousand feet. It is a shrub five or six feet tall with erect stems, small, narrow pointed leaves with only two or three pairs of prominent veins, small clusters of white flowers and black fruits. There is a good specimen of this plant among the Chinese shrubs on the southern slope of Bussey Hill which in a few days will be covered with flowers. Shrubs which flower here late in July are not very common and this Cornel promises to be a useful addition to the list.

Late flowering Barberries. Three species of *Berberis* from western China are now in flower, *B. aggregata*, *B. Prattii*, and *B. subcaulialata*. These plants will probably become popular for they are the latest of the Barberries to flower. They are all erect-growing, tall shrubs with small yellow flowers in drooping clusters which are followed by red fruits. There are plants in the Shrub Collection and with the Chinese shrubs on the southern slope of Bussey Hill.

Hydrangea radiata. A form of *Hydrangea arborescens* (var. *grandiflora*), with large globose heads of sterile flowers, has become immensely popular in this country since its discovery a few years ago in one of the western states, and it can now be seen in many suburban gardens. A much more beautiful American species, however, is *Hydrangea radiata*, which is now in flower in the Shrub Collection. It is a native of mountain slopes in North and South Carolina, and is a round-topped shrub with large leaves very dark green above and silvery white below, and broad heads of flowers surrounded by a ring of white neutral flowers. It is one of the handsomest of all the Hydrangeas which are perfectly hardy in this climate, and although once a popular garden plant it is now rarely found in collections.

Hydrangea paniculata. More conspicuous now in the collection is the early-flowering form of *Hydrangea paniculata* (var. *praecox*). The most generally planted form of *Hydrangea paniculata* is that in which all the flowers are sterile, known as *Hydrangea paniculata grandiflora*. This plant produces large clusters of white flowers which turn rose color in fading, and will not be in bloom for several weeks. The variety *praecox*, which is one of the forms of the wild plant, has ray flowers surrounding the clusters of sterile flowers. There are two or three forms of the variety *praecox* in the collection differing in the size of the flower-clusters and in the size of the ray flowers. The handsomest and earliest of these was raised from seeds collected by Professor Sargent in Hokkaido where it grows into a small tree sometimes twenty or thirty feet tall.

Colutea arborescens. This and related species are now among the most beautiful plants in the Shrub Collection as they are still covered with yellow flowers which are mixed with the large, inflated, rose-colored or pink pods to which these plants owe their common name of Bladder Sennas.

Aesculus parviflora. The last of the Horsechestnuts to flower, *Aesculus parviflora*, will soon be in bloom. It is a tall, round-topped, shapely shrub well suited to plant in large masses or as a single specimen. In good soil and when uncrowded by other plants it soon spreads

over a large area. A native of the southeastern states, where it is found from South Carolina to Florida and Alabama, this Horsechestnut is hardy in New England, and in cultivation at the north grows into a larger and finer plant than in its native wilds. The small white flowers are produced in long, narrow, erect spikes which stand up above the plant and make them conspicuous during the last weeks of July. There is a mass of these plants at the northern base of the wooded hill on the right-hand side of the Meadow Road and in the rear of the Horsechestnut Group.

Clematis tangutica. Attention is called again this year to this handsome yellow-flowered Clematis which is growing on the trellis at the eastern side of the Shrub Collection. The flowers continue to open during several weeks, and there can now be seen on the plant opening flower-buds and fully grown clusters of fruit conspicuous from the long, silvery-white "tails."

Amorpha canescens. This member of the Pea Family, the Lead Plant of the early settlers on the western plains, will soon open its small violet-colored flowers which are crowded on clustered terminal spikes and are set off by the hoary down which thickly covers the leaves and branches. This handsome and conspicuous plant grows three or four feet tall and is a native of the Mississippi valley where it is found on low hills and prairies from Indiana and Minnesota to Texas.

Rosa Wichuraiana. The pure white flowers of this Japanese Rose can now be seen on a plant in the Shrub Collection with its long stems flat on the ground. Grown in this way it is perfectly hardy, although in eastern Massachusetts when an attempt is made to train it over a trellis or on a building it suffers from cold. There is no better plant for clothing banks, which, when the flowers open, look as if they had been covered with snow. This Rose is one of the parents of some of the most beautiful Rambler Roses which, very successful further south and in Europe, are not very hardy in this latitude.

Rosa setigera. This, the Prairie Rose, is the last of all the Roses in the collection to flower, and no Rose is more beautiful than this inhabitant of the western states where it grows from Michigan to Texas. It is a free-flowering and perfectly hardy plant with tall arching stems, ample bright-colored foliage and broad clusters of pink flowers. It can be trained over an arbor or against a building, but looks best when allowed to grow naturally without any training whatever. There is a mass of this Rose on the right-hand side of the Forest Hills Road in front of the Cherries, and it is in the Shrub Collection.

Brilliant fruits. From this time until April of next year the Arboretum will be interesting for the fruits which are to be seen here. Nothing so surprises and delights European visitors who come to the Arboretum in summer and autumn as the profusion of showy fruits which are produced here by many trees and shrubs. The Bush Honeysuckles are perhaps now the handsomest plants in the Arboretum with ripe fruit. They produce fruit in great quantities and it remains in good condition for several weeks, and as the different species ripen their fruit from July until the beginning of October the second period

of their beauty is a long one. On different species and hybrids there are blue, black, orange, yellow, wine-color and scarlet fruits, and these beautiful and abundant fruits following beautiful flowers make some of the Bush Honeysuckles desirable garden plants especially in the northern United States where they are very hardy and where they appear to fruit more freely than in other parts of the world. The orange-colored translucent fruit of *Lonicera minutiflora* is perhaps the most beautiful in the collection. This plant is a hybrid between the Tartarian Honeysuckle from Central Asia and a species from eastern Siberia, *L. Morrowii*. *L. muscaviensis* is covered with large and translucent scarlet fruit. The fruits of the Tartarian Honeysuckles are sometimes red and sometimes bright yellow. Two hybrids of this species, *L. bella* and *L. notha*, bear crimson fruit. *L. Xylosteum* produces large, dark crimson, lustrous fruit, and a hybrid of it, *L. xylosteoides*, large red fruit. All the numerous forms of *L. coerulea* in the collection, a species which is found in all the colder parts of the northern hemisphere, have bright blue fruit, and that of *L. orientalis* is black and lustrous. *L. Koehneana*, a native of western China, is now covered with large, dark, wine-colored, almost black fruits which follow yellow flowers. This is a native of western China and is a hardy and valuable garden plant. There is a large specimen now covered with fruit among the Chinese shrubs on the southern slope of Bussey Hill. These Bush Honeysuckles form a group of shrubs worthy of the attention of persons who desire to form collections of large, fast-growing, hardy shrubs beautiful when covered in early spring with innumerable flowers or in early summer or in autumn when their showy fruits are ripe.

Acer tataricum. The fruits of this Maple are now fully grown and conspicuous from the bright red color of the keys. It is a small tree or treelike shrub and a native of southeastern Europe and western Asia. It is an early-flowering, very hardy Maple well worth cultivating for the brilliancy of its fruit alone. An old inhabitant of the gardens of western Europe and of the United States, it has been rather lost sight of since the introduction of the Japanese Maples. Plants can be seen in the Maple Collection.

Tsuga caroliniana. After two of the severest winters of recent years the perfect condition of this southern Hemlock in the Arboretum shows that it can be depended on to flourish in southern New England. A smaller tree and less graceful perhaps than the Hemlock of our northwest coast, *T. heterophylla*, the most beautiful of all the Hemlocks, the Carolina tree is the handsomest representative of the genus which can be successfully grown here. The Carolina Hemlock was first raised in the Arboretum more than thirty years ago, and among the seedlings are two or three dwarf plants which are broader than high and beautiful subjects for planting in small gardens. Judging by the experience at the Arboretum with this tree, it may be placed among the six most desirable conifers for planting in southern New England, the others being the White Pine, *Pinus Strobus*, the Red Pine, *Pinus resinosa*, the northern Hemlock, *Tsuga canadensis*, the White Fir of Colorado, *Abies concolor*, and the Japanese *Abies brachyphylla*.

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European Elms. There is probably more confusion in the identification and proper naming of these trees in American parks and gardens than of any other group of trees, and it is only in very recent years that English botanists have been able to reach what appear to be sound conclusions in regard to them. The confusion started with Linnaeus who believed that all the European Elms belonged to one species, and it has been increased by the appearance of natural hybrids of at least two of the species and by the tendency of seedlings to show much variation from the original types. There are five species in Europe; the first of these is

Ulmus campestris. It is this tree which is generally spoken of as the English Elm in eastern Massachusetts where it was planted more than a century ago and where it has grown to a larger size than any other tree planted in this region. The Paddock Elms, which were once the glory of Tremont Street, and the great English Elms which stood on Boston Common until a few years ago were of this species, and large specimens can still be found in the suburbs of the city. *Ulmus campestris* is a tall tree with dark rough bark, massive ascending branches, comparatively small, rough, ovate leaves with hairy petioles not more than one-fifth of an inch long, and young branchlets covered with short soft hairs. In England and the United States it very rarely produces fertile seeds but great quantities of suckers by which it is propagated. This tree possibly only grows naturally in the hedge rows and parks of southern England where it may be indigenous. It was largely planted in the Royal Park at Avanguez, near Madrid, toward the end of the sixteenth century, but it has been usually believed that these trees were imported from England. The trees,

however, at Avanguez produce fertile seeds in abundance and Henry suggests (*Trees of Great Britain*, VII. 1908) "that this tree may be a true native of Spain, indigenous in the alluvial plains of the great rivers now almost deforested." A dwarf Elm tree with small leaves is now usually considered a seedling form of *Ulmus campestris* (var. *viminalis*). There are forms in cultivation with leaves variegated with yellow (var. *vilminalis aurea*) and with white (var. *viminalis marginata*).

Ulmus nitens. This is perhaps the most variable of Elm trees in habit and one of the most widely distributed of the European trees. It may be distinguished from *Ulmus campestris* by its less deeply furrowed bark, mostly glabrous branchlets, longer, often obovate leaves, lustrous and usually smooth on the upper surface, with petioles from one-quarter to one-half an inch long. The seeds of this tree have been sold for years by European seedsmen under the name of *Ulmus campestris*, and a great many specimens of this Elm have been planted in the United States in the last fifty years under that name. *Ulmus nitens* is a common tree in the southern, midland and eastern counties of England, and ranges through central and southern Europe to the Caucasus and probably to northeastern Asia. In England trees of this Elm occur with a broad head of spreading and more or less pendulous branches. This form is often called the Herefordshire Elm, as it is this particular form which is most often found in that part of England, and some of the old Herefordshire Elms are only surpassed in beauty by *Ulmus americana* as it sometimes grows in New England. The Cornish Elm, a tree with erect branches which form a narrow pyramidal head, is usually considered a variety of *Ulmus nitens* (var. *stricta*), although some modern authors treat it as a distinct species. This is the common Elm tree of Cornwall and some parts of Devonshire, and is also found in Brittany. The Guernsey, Jersey or Wheatley Elm (var. *Wheatleyi*) is another pyramidal tree which is believed to be a variety of the Cornish Elm, from which it differs in its rather broader head, its earlier flowers and wider leaves. It is sometimes called variety *sarniensis*. On one of the forms of *Ulmus nitens* (var. *suberosa*) the branchlets are furnished from the second to the tenth year with corky wings which are most developed on sucker shoots. The Elm of central Europe referred to as *Ulmus nitens* is of this variety, and young plants in the Arboretum raised from seeds collected in Hungary develop these wings when only a few years old. An interesting form of *U. nitens* (var. *umbraculifera*) is a tree with a dense globose head sent from Persia to Germany in 1878. This curious tree is doing well in the Arboretum and promises to grow here to a large size. Other interesting varieties are var. *pendula*, with very pendulous branches and branchlets, var. *Dampieri*, a fastigate tree with a narrow pyramidal crown, and var. *variegata* with leaves blotched with white. This appears to be the most common of the Silver-leaved Elms and is often seen in American collections where it grows to a large size.

Ulmus glabra. This is the so-called Scotch Elm and is also known as *U. montana* and *U. scabra*. It is a tree with wide-spreading branches making a broad, open, round or flat-topped head, large leaves broadest above the middle, often three-lobed at the apex, dark green

and very rough on the upper surface, and covered below with soft pale down; their petioles are not more than one-eighth of an inch long. This Elm can also be distinguished by the fact that the seeds of the fruit are in the middle of the surrounding wings. This tree does not produce suckers, but great crops of seeds which are blown about and germinate freely, and in this country produce innumerable plants which often become troublesome weeds. In eastern Massachusetts in recent years the leaves of this species and its varieties have been injured in early summer by the larvae of a leaf-mining insect which feed under the epidermis. *Ulmus glabra*, which owes its name to the smoothness of the pale branches, is a native of northern England and Scotland, and is widely distributed through Europe to the Caucasus, appearing again in eastern Siberia, Manchuria, northern Japan, and in northern and western China (var. *heterophylla*). Many seedling forms of *Ulmus glabra* are in cultivation. The best known, perhaps, is the Camperdown Elm (var. *pendula Camperdownii*). This has pendulous branches and branchlets which when grafted on a tall stem form a natural arbor. A handsomer weeping form is the var. *pendula*, often found in collections under the name of var. *horizontalis*. The Exeter Elm (var. *fastigiata*) is a narrow pyramidal tree with erect growing branches and branchlets. Var. *crispa* is a small tree with narrow, wrinkled, lacinate leaves and is more curious than beautiful. Var. *atropurpurea* has dark purple folded leaves and has little to recommend it as an ornamental tree.

***Ulmus laevis*.** This is the common Elm in some parts of Scandinavia, northern Russia, and occurs sparingly in Denmark and the Balkan States. This tree is very closely related to *Ulmus americana* but differs from it in the much thicker coating of down on the lower surface of the leaves and in the longer and sharp-pointed buds. The Arboretum specimen has been growing here since 1888, and although unfortunately a grafted plant is one of the handsomest Elms in the collection, now about fifty feet tall with a short trunk eighteen inches in diameter, a broad pyramidal head, and dark thick foliage. This tree is probably exceedingly rare in American collections. It might well be generally introduced into this country as it would certainly be hardy in any of the northern states and in Canada. It is sometimes called *Ulmus pedunculata* and *U. effusa*.

***Ulmus minor*.** This is a small-leaved Elm which is common in the eastern counties of England and has been reported from western Europe. It is a tree from forty to ninety feet tall with short ascending branches and pendulous branchlets, and produces suckers freely. It is often called *Ulmus sativa*. There are only young grafted plants in the Arboretum.

Hybrid Elms. A number of natural hybrids between *Ulmus glabra* and *U. nitens* have appeared in Europe. The oldest general name for these hybrids is *Ulmus hollandica*, and under existing rules of nomenclature the different hybrids of the same parentage are considered varieties. The best known of these trees in the United States is the Huntington Elm.

***Ulmus hollandica*, var. *vegeta*.** This tree, which was raised in a nursery at Huntington about the middle of the eighteenth century,

sometimes grows one hundred feet high or more, with a massive trunk and ascending or spreading branches; it suckers freely and also produces, at least in England, large crops of seeds. The Huntington Elm can be seen to great advantage in Cambridgeshire, England, where it has been largely planted, especially in Cambridge itself where there is a noble avenue of these trees. In New England it grows perhaps more rapidly than any other Elm-tree, and it is one of the best Elms to plant here.

Ulmus hollandica, var. belgica. This is another hybrid probably of the same parentage. It is a tree with a tall rough-barked stem and wide-spreading branches which form a broad head covered with dense foliage. It was cultivated in Flanders in the eighteenth century and for many years has been the principal Elm-tree planted by roadsides and in parks in Belgium and Holland. It is said that in Belgium it grows more rapidly than any other Elm-tree, and that it succeeds better on poor sandy soil than any other Elm. As it grows in the streets of the Dutch cities there is certainly no better street tree, but it is still too soon to speak of its value or of its rapidity of growth in this country, although the plants in the Arboretum are flourishing. This Elm is often sold in European nurseries as *Ulmus hollandica*. There is a variety of this tree (var. *Dumontii*), with more ascending branches which form a narrow head. This has been planted as a street tree in Europe but is believed to grow more slowly than the common form of the Belgian Elm.

Ulmus hollandica, var. Klemmer is another supposed hybrid of the same parentage, and in habit is more fastigate than the Belgian Elm. This has also been a favorite tree with Belgian and Dutch planters.

Ulmus hollandica, var. superba. This is probably another hybrid of the same parentage and is described by European dendrologists as a narrow pyramidal tree; it is therefore different from the tree in the Ellwanger & Barry Nursery at Rochester, New York, called *Ulmus superba*, which is probably only a varietal form of *Ulmus glabra* or another hybrid of that species.

Ulmus hollandica, var. major. This is also probably an English hybrid of the same parentage; it is a large dark-barked tree with wide-spreading branches and corky branchlets, and suckers freely. This tree is common in England, and it is the Elm with winged branches which is sometimes found in American collections under the name of *Ulmus campestris*. It is often called *Ulmus hollandica* and is sold in European nurseries under that name.

During the next month several interesting plants will flower in the Arboretum. Among trees may be mentioned the Chinese *Koelreuteria paniculata*, the American and Asiatic forms of *Aralia spinosa*, the Japanese *Acanthopanax ricinifolium* and *Sophora japonica*; and among shrubs the Pepper-bush of the eastern United States (*Clethra alnifolia*), which has been largely used in the roadside plantations, and *Panax sessiliflorus* from eastern Siberia which is in the *Aralia* Group near the junction of the Meadow and Bussey Hill Roads.

These bulletins will now be discontinued until autumn.

ARNOLD ARBORETUM
HARVARD UNIVERSITYBULLETIN
OF
POPULAR INFORMATION

JAMAICA PLAIN, MASS.

OCTOBER 22, 1915

The Arboretum in October. This is one of the best months for a visit to the Arboretum, and after the abundant rains of the summer it has never looked better at this season of the year than it does now. The grass is as green as it usually is in early June. Frost has only touched the leaves of a few of the Grapevines which are perhaps more susceptible to frost than those of any other perfectly hardy plants; the leaves of only a few trees have fallen and on others they are as green as they were at midsummer, while in all directions are spots of brilliant autumncolor varying with every intermediate shade from the bright clear yellow of the Tulip-trees, the Sugar Maples and the Paw-paws to the scarlet of the Gum-trees and Virginia Creepers.

Autumn flowers are not abundant in the Arboretum in October, although a few may still be found here. The northern Witch Hazel, *Hamamelis virginiana*, however, is covered with its flowers which are conspicuous with their clear yellow strap-shaped petals. The autumn color of the leaves of this plant is also yellow but of a darker shade than the flowers, and the leaves usually do not fall until the flowers begin to open; these, however, remain for a long time in good condition on the naked branches, making this shrub one of the most attractive features of forest borders in the eastern states. This Witch Hazel may be seen in the Witch Hazel Group on the Meadow Road near its junction with the Bussey Hill and Forest Hills Road, and it has been largely planted in the general Arboretum plantations where many large specimens may be found.

*Gordonia alata*amaha. Flowers are still opening on this beautiful southern tree. They first appear in September and open in succession

for fully six weeks. *Gordonia* is related to the *Camellia*, and the pure white flowers which vary from three to three and a half inches in diameter, although more cup-shaped, resemble single *Camellia* flowers. This small tree was discovered in 1765 near Fort Barrington on the Altamaha River; it has entirely disappeared, however, as a wild plant, and it has only been preserved by the specimens cultivated chiefly in the neighborhood of Philadelphia where it was sent by its discoverers. There are well established plants on Hickory Path near Centre Street and on Azalea Path, and in these sheltered positions the plants are doing well and have not suffered at all in recent severe winters. This *Gordonia*, however, grows more rapidly and to a larger size in the middle states and there are many good specimens in Pennsylvania gardens.

Abelia grandiflora on Hickory Path near Centre Street is still well covered with flowers. These resemble in shape the flowers of some of the Honeysuckles; they are white faintly tinged with rose color, and their delicate beauty is set off by the small, dark green and lustrous leaves. *Abelia grandiflora* is a slender shrub with arching stems from three to four feet high and is thought to be a hybrid between two Chinese species. Until the introduction by the Arboretum of some of the species of this genus from western China it was believed to be the hardiest of the *Abelias*. In the Arboretum it suffers in severe winters but in sheltered positions it flowers well every year and the flowers continue to open during nearly two months. This *Abelia* has become an exceedingly popular plant in the gardens of the southern states and is cultivated with more or less success as far north as New York.

The Chinese Buddleias. The flowers are still in good condition on the different forms of *Buddleia Davidii* or, to use its more common name, *B. variabilis*. This plant has one-sided, pointed, many-flowered clusters which curve downward from arching stems and are thickly covered with small, blue-purple, fragrant flowers. In some of the forms of this plant are found perhaps the most beautiful of all summer and autumn flowering shrubs, and although only recently brought to the United States and Europe by Wilson they are already largely planted in this country where they have received the name of Summer Lilacs. Here at the north *Buddleia Davidii* is not perfectly hardy, and the stems are killed to the ground by cold, but new stems spring up and as the flower-clusters are produced at the ends of branches of the year this severe pruning improves the flowers. Few plants in their season are better suited to supply cut flowers, and for this purpose as well as for garden decoration this *Buddleia* in its various forms has proved one of the most useful shrubs of recent discovery.

The period for flowers in the Arboretum. It has been shown by the Arboretum that flowers can be found here in Massachusetts on trees and shrubs growing in the open ground during every month of the year with the exception of December. There will still be flowers on the native Witch Hazel in November and before the end of January the flowers will be open on the Witch Hazel of southern Missouri and Arkansas, *Hamamelis vernalis*. These will soon be followed by the

flowers of the Japanese and Chinese Witch Hazels which last well through February and do not suffer from the severest cold eastern Massachusetts ever has to endure. Then before the end of March the flowers of some of the Willows open and begin the long procession which only ends in November. The introduction of the Asiatic Witch Hazels has added greatly to the interest of northern gardens in winter and they are bright and cheerful winter companions. They might, therefore, well find a place near every country home and in small city yards. The flowers of the Chinese species, *Hamamelis mollis*, are larger and of a brighter yellow color than the flowers of the other Witch Hazels and this promises to be the best worth cultivation of them all. It is a perfectly hardy vigorous shrub, grows rapidly, and begins to flower when only a few feet high. Specimens of all the species of *Hamamelis* are planted in the group of these plants on the Meadow Road, and the best specimen of *Hamamelis mollis* is on Hickory Path near Centre Street.

Evonymus alatus. The leaves of many of the trees and shrubs of eastern Asia turn to as brilliant colors in the autumn as those of the related species of eastern North America. Usually, however, the leaves of the Asiatic species change color later than those of the American species, and in Japan the best color effects are in November or a month later than here. There are, of course, many exceptions to this general rule. The leaves of *Evonymus alatus*, for example, were brilliant in the Arboretum ten days ago and are already beginning to fall. This is a shapely shrub six or eight feet tall and ten or twelve feet broad, distinguished by the corky wings of the branches. The flowers, as in all the species of this genus, are not conspicuous and the fruit is smaller and less showy than that of many of these plants. The great value of this hardy Japanese Burning Bush is therefore found in the autumn coloring of the leaves, which assume a deep rose color of exquisite beauty and unlike that produced by any other hardy plant in cultivation.

Acer ginnala. The leaves of this Maple also turn and fall by the middle of October, and equal or surpass in their autumn scarlet those of any American plant. *Acer ginnala* is a small shrubby tree with deeply dentated leaves, sometimes thirty feet high, and very common along forest borders near Vladivostok and in other parts of eastern Siberia. The flowers are produced in rather compact clusters and, unlike those of other Maples, are distinctly fragrant. This Maple is one of the first Siberian trees introduced by the Arboretum and it is now gradually finding its way into general cultivation in this country.

Nyssa sylvatica. There is perhaps no more beautiful object this week in the Arboretum than the group of these trees variously known as Sour Gum, Tupelo and Pepperidge. The scarlet and orange colors of the leaves of the Sour Gum in October are probably not surpassed by those of any other American tree and their beauty is increased by the lustre of the leaves which adds to their autumn brilliancy. The Tupelo is a common and widely distributed tree, occurring from Maine to Florida, Missouri and Texas. At the north, especially near the coast, it is usually found near the borders of swamps and ponds, and is a low,

flat-topped, shapely tree with wide-spreading branches; in the interior of the country and especially on the slopes of the high southern Appalachian Mountains it grows sometimes a hundred feet high and forms a tall, massive trunk often five feet in diameter and a narrow head of erect branches. The flowers are inconspicuous, and the small, dark blue, plum-like fruit is so hidden by the leaves that it does not make much show. The beauty of this tree is found in its habit and in the thick dark green, shining leaves. The long hard roots make the Sour Gum difficult to transplant and only very small plants can be successfully moved. It is not therefore often found in nurseries and has never received the attention from planters of ornamental trees which it deserves. The group of this tree is at the lower end of the Bussey Hill Road near the small pond, at the junction of this road with the Meadow and Forest Hills Roads.

Halesia tetraptera, var. *monticola*. The Silver Bell tree of the southern states, *Halesia tetraptera*, has long been cultivated in northern gardens. It is usually shrubby in habit with several stout wide-spreading stems, and here at the north, rarely grows more than fifteen or twenty feet high. It is an inhabitant of the southern states from West Virginia to southern Illinois, northern Florida and eastern Texas. It grows at low altitudes and does not appear to ascend to the slopes of the high Appalachian Mountains, although the *Halesia* of those mountain forests was long considered identical with the lowland tree. The *Halesia* of the high slopes, however, is a tree often eighty or ninety feet high, with a trunk three feet in diameter, sometimes free of branches for a distance of sixty feet from the ground. It is apparently only in recent years that this mountain tree has been introduced into cultivation by the Biltmore Nursery. From Biltmore it was sent to the parks of Rochester, New York, and from Rochester it came to the Arboretum with a description of its peculiar habit, large flowers and fruit. The mountain tree which has lately been distinguished here as var. *monticola* grows as a tree from the time the seed germinates and the seedlings show no variation of habit. Young trees are clean stemmed with short branches which form a narrow pyramidal head. The leaves are of rather different shape and less hairy than those of the lowland tree; the flowers are fully a third larger and the fruit is nearly twice as large. Trees less than ten feet produce flowers and fruit in abundance. There is now every reason to believe that the mountain *Halesia* will prove one of the handsomest flowering trees of large size which it is possible to cultivate in this climate. Its tall trunk and narrow head suggest that it may prove a good street and roadside tree. Two young trees now covered with fruit are growing on the upper side of Hickory Path near Centre Street; growing with them is a plant of the lowland form, also covered with fruit, so that it is possible to compare these two forms as they appear at this season of the year.

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JAMAICA PLAIN, MASS.

OCTOBER 29, 1915

Some Asiatic Burning Bushes. (*Evonymus*.) One of these plants, *Evonymus Bungeanus*, which has been an inhabitant of the Arboretum for thirty years, deserves more general cultivation than it has yet received in this country. It is a small tree or treelike shrub with slender rather pendulous branches and narrow, pointed, pale green leaves; these are now turning yellow or yellow and red, but the great beauty of this plant is in the rose-colored fruit which every year is produced in great quantities and remains on the branches for several weeks after the leaves have fallen, making this native of northern China a desirable plant for the autumn garden.

***Evonymus lanceifolius*.** This shrub, which is one of Wilson's introductions from western China, promises to become a valuable garden plant in this climate. On the mountains of western China it grows as a large bush or occasionally as a tree, and is sometimes fifty feet high with a tall trunk nearly a foot in diameter. In the Arboretum, where it is growing in the *Evonymus* Group on the Meadow Road, it is perfectly hardy and is now a bush from three to four feet tall and broad, covered with bright scarlet fruit and leaves which are still partly green and are partly turned to shades of orange and red. In the size and brilliancy of the fruit few of the plants of this group equal this Chinese species.

***Evonymus yedoensis*.** The leaves have already fallen from this Japanese plant in the *Evonymus* Group, but the large rose-colored fruits which now cover the naked branches make it one of the conspicuous plants in the Arboretum.

Evonymus semipersistens. There is a large specimen of this little known Chinese plant in the collection. Fruit of this *Evonymus* has no ornamental value for it is small and hidden by the foliage, and its value is found in the persistence of the leaves which remain perfectly green and do not fall until December. This is one of the handsomest of the shrubs in the Arboretum which retain their foliage, without change of color until the beginning of winter. Such plants are valuable in the autumn garden to contrast with plants of brilliant autumn coloring. Another valuable plant for this purpose is

Magnolia glauca, the Sweet Bay of the Atlantic and Gulf Coast regions from Massachusetts to Texas. This *Magnolia* is still covered with its bright green shining leaves which are silvery white on the lower surface and these will not become discolored or fall for at least another month. Attention has often been called in these Bulletins to the value of this tree in New England gardens. Few deciduous-leaved trees have more beautiful and more persistent foliage; the cup-shaped creamy white flowers continue to open during at least two months of early summer and fill the air with their abundant fragrance, and the fruit, like that of all the *Magnolias*, is interesting and handsome when the bright red seeds hang from it on slender threads.

Ligustrum vulgare. This is the European Privet and another plant which retains its dark green leaves well into the winter. During the last twenty or thirty years much attention has been paid by botanists and gardeners to the Privets of eastern Asia where many species have been discovered. None of these, however, are as valuable in this climate as the European species, which is perhaps the handsomest here of all black-fruited shrubs. The bright shining fruit is borne in compact clusters which are on the ends of the branches and stand up well above the dark green lustrous leaves; they remain on the plants during the early winter months and after the leaves have fallen. During the first half of the nineteenth century this Privet was a common garden plant in the northern United States where it was much used in hedges; and it is now sparingly naturalized in the northern and middle states. There are several forms of this Privet in cultivation, including one with yellow fruit (var. *chlorocarpum*) which can now be seen covered with fruit in the Shrub Collection. The variety *foliolosum* is also growing here; this has rather narrower leaves and larger fruits than the common form and at this season of the year is one of the handsomest plants in the Arboretum.

Myrica carolinensis. This is the common Wax Myrtle of the northern United States and one of the plants which holds its dark green shining leaves very late in the autumn without change of color. Now the plants are covered with their small gray fruits, unlike in color those of any other plant hardy in this climate. Naturally the Wax Myrtle grows on sterile sandy soil and, spreading into wide masses, makes attractive thousands of acres of barren fields during several months of the year. The Wax Myrtle takes kindly to cultivation; in good soil it grows rapidly and forms a tall round-headed shrub, and it can be used with advantage to cover soil so poor that few plants can be kept alive

in it. From the waxy substance which covers the seeds of this shrub and that of the arborescent *Myrica cerifera* of the southern coast early settlers in America made wax candles which are still occasionally produced in some parts of Cape Cod where *Myrica carolinensis* grows in immense quantities.

Lonicera Maackii, var. podocarpa. Of the plants in the Arboretum conspicuous at this time for the beauty of their fruit none perhaps is more beautiful than this Honeysuckle which was introduced by Wilson from central China. It is a large, vigorous and hardy shrub with wide-spreading branches and open habit. The flowers are larger than those of most Honeysuckles and are white and in one form white slightly tinged with rose color. The period of the greatest beauty of this plant, however, is late October, for now it is still covered with bright green leaves and the large scarlet lustrous fruits are only just ripe. The best specimens of this Honeysuckle in the Arboretum can be seen in the collection of Chinese shrubs on the southern slope of Bussey Hill. The type of this species, *Lonicera Maackii*, is a native of eastern Siberia and is an old inhabitant of the Arboretum where it is growing in the Shrub Collection. It is a narrow shrub with stems more erect than those of the form from central China. The flowers are pure white, and more beautiful than those of the Chinese plant, but the fruit which is now ripe is smaller, and the leaves have already fallen.

Ribes fasciculatum, var. chinense. This Chinese Currant is interesting because it is the only species here with fruit which does not ripen until late in the autumn. The beauty of the scarlet fruit is increased, too, at this time by the color of the leaves which have now turned to bright shades of orange and scarlet. There is a plant of this Currant in the Shrub Collection, but the plants in the supplementary Ribes Collection opposite the Administration Building are in better condition.

Evonymus radicans, var. vegetus. Attention is again called to this form of a well known plant from Japan, for the plants in the Evonymus Group on the Meadow Road are now covered with their handsome fruit; this is pale yellow or nearly white, and as it ripens the bright orange color of the seeds is displayed. This northern variety is the best for general cultivation in this climate as it appears to be hardier than more southern forms; the leaves are broader and it flowers and fruits much more freely; indeed it is the only form which produces much fruit in the Arboretum and the fruit adds greatly to the beauty of the plants. Like the other vigorous growing varieties it may be grown against a wall to which it clings firmly or as a broad, round-headed bush. There is a form of this Evonymus with leaves hardly a quarter of an inch long and known both as var. *minimus* and as var. *kewensis* which appears to be still little known in the United States. It is a good plant for the rock garden and for the margins of garden walks. The form from western China discovered by Wilson, var. *acutus*, has narrower pointed leaves distinctly veined below. Here in the Arboretum the plants of this form lie flat on the ground and show no tendency to rise and form a bush. They have proved perfectly hardy

but have not flowered yet. A mat of these handsome Chinese plants can be seen among the other Chinese plants on the southern slope of Bussey Hill. If this form retains in cultivation the prostrate stems of its present state it may prove an excellent subject for covering the ground under trees and shrubs.

Asiatic Crabapples. Many of these small trees and shrubs are well covered with fruit this year. When the whole group is considered few plants are more valuable for garden decoration in this climate if attention is paid to keeping them free from the scale insects which are destructive to all plants of the Apple tribe. All the Asiatic Crabs are perfectly hardy; they grow quickly in good soil, and many of them begin to flower and produce fruit when only a few years old. No plants are more beautiful at the end of May when they are covered with their countless pink and white flowers; and on some of them the fruit is showy and long persistent. The original Arboretum collection of these plants is on the bank rising from the left-hand side of the Forest Hills road, but there is a larger supplementary collection at the eastern base of Peter's Hill. Here will be found nearly every species and many of the varieties and hybrids of these plants. A few of the conspicuous plants just now are *Malus ringo* with yellow fruit, interesting as the plant from which the Apple cultivated in China has been derived, and the only Apple cultivated in Japan until recent years. *Malus floribunda* and the hybrid raised in the Arboretum from that species, *Malus Arnoldiana*, with yellow fruits are now conspicuous, as are *Malus zumi* and *M. Sargentii* from Japan with bright scarlet fruit; the latter is the only Apple which is shrubby in habit. Interesting, too, is the form of the Japanese *Malus toringo* from northern China with small fruits yellow on some plants and red on others. These are only a few of the plants in this large collection which at this time deserve careful study.

An illustrated guide to the Arboretum containing a map showing the position of the different groups of plants has recently been published. It will be found useful to persons unfamiliar with the Arboretum. Copies of this guide can be obtained at the Administration Building in the Arboretum, from the Secretary of the Massachusetts Horticultural Society, 300 Massachusetts Avenue, Boston, from The Houghton, Mifflin Company, 4 Park Street, Boston, at the Old Corner Bookstore, Bromfield Street, Boston, and at the office of the Harvard Alumni Bulletin, 50 State Street, Boston. Price, 30 cents.

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The Pinetum. The abundant rains of the past season have been a great benefit to the conifers in the Arboretum and many of these plants are now in an unusually good condition in spite of the severity of several recent winters. It is the province of the Arboretum to teach as far as it is possible to do so the value of all trees in this climate and to show those which fail as well as those which succeed, a duty which sometimes interferes with the beauty of the Arboretum as a garden. It has been shown by the Arboretum, for example, that the Balsam Fir, of the northeastern United States (*Abies balsamea*) and its near relatives, the Fir of the southern Appalachian Mountains (*A. Fraseri*), the Fir from the northern Rocky Mountain region (*A. lasiocarpa*), and the species of central Siberia, *A. sibirica*, can live here but soon become unsightly, and they are not worth growing in this climate for ornament or as timber trees. It has been shown here, too, that eastern Massachusetts is not cold enough for the White Spruce of the north, *Picea canadensis*. This beautiful tree grows here rapidly until it is about twenty-five years old and then, save in exceptional situations, it begins to become thin and soon loses its beauty.

Pacific Coast Conifers. Of the conifers of the Pacific coast region of North America the White Pine, *Pinus monticola*, is the most successful. It is hardy, grows rapidly and, although not more beautiful or as valuable as the native White Pine, *Pinus Strobus*, it is a tree well worth attention in New England. The Sugar Pine, *Pinus Lambertiana*, which on the California Sierra Nevada becomes the largest of all Pine trees, is perfectly hardy here and is in good condition although it grows slowly. The White Fir of the California Sierras,

Abies concolor, lives here in good condition for many years but is a less valuable tree in this climate than the plants of the same species derived from Colorado. *Abies nobilis* can live here in sheltered positions but does not become a tree, although the beautiful *Abies amabilis* which grows with it on the mountains of Oregon and Washington does better but grows slowly and has now been in good condition in the Arboretum for several years. Another tree which is rarely seen in northern collections, *Libocedrus decurrens*, the Incense Cedar of California, is in good condition in the small collection of exotic conifers near the top of Hemlock Hill in an exceedingly sheltered position. The Incense Cedar is a tree of narrow columnar habit with bright green foliage, and in California sometimes grows to the height of one hundred and fifty feet and forms a massive trunk. There are good specimens in the District of Columbia and it may well be more generally planted in the middle and southern states. The two beautiful White Cedars of the northwest coast, *Chamaecyparis Lawsoniana* and *C. nootkatensis*, can just be kept alive in the Arboretum where they drag out a miserable existence. Jeffrey's Pine, *Pinus ponderosa*, var. *Jeffreyi*, lives but that is all that can be said of it. None of the other coast conifers of western North America are hardy here, but fortunately a few of the northern species range inland to the western slope of the northern Rocky Mountains, and when plants of these species are obtained from the interior cold region they can be successfully grown in Massachusetts. Thus the Arboretum is able to keep in good condition the so-called Red Cedar of the northwest, *Thuja plicata*, or as it is more often called, *T. gigantea*. This is one of the noblest trees of which North America can boast and, although it will never grow to its largest size or become an important timber tree here, it is an ornamental tree in the Arboretum of considerable value and another witness to the importance of raising trees for cold climates from seeds gathered in the coldest parts of the area such trees naturally inhabit. It is possible, too, to grow here in the Arboretum the White Fir of the northwest coast, *Abies grandis*, and the coast Hemlock, *Tsuga heterophylla*, raised from seeds gathered on the Rocky Mountains of Idaho as these two trees also range far inland.

Colorado Conifers. The Douglas Spruce, *Pseudotsuga mucronata*, from Colorado is hardy in this climate and promises to be long-lived here although this tree from the northwest coast, where it grows in its greatest perfection, is not hardy in New England. The other conifers from the interior of the continent are hardy but are not of much promise as ornamental or timber trees for the eastern states. *Picea pungens*, the well known Colorado Blue Spruce, which is still largely propagated and sold by European and American nurserymen, will disappoint many planters of trees for its beauty is comparatively short-lived. This tree growing naturally in small groves by some of the streams of the southern Rocky Mountains becomes at the end of a few years thin and scrawny in habit with a few short branches on the upper part of the trunk, and is as ugly an object as a tree can well be. In cultivation the Blue Spruce for several years is compact in habit with wide-spreading branches in regular layers, but as the trees grow older

the branches at some distance from the ground grow more rapidly than those at the base of the trunk, and overshadow and gradually kill them. The oldest of these trees in cultivation were raised from seed collected by Dr. C. C. Parry in 1862 and are thus only fifty-three years old. One of these original trees is growing in the Arboretum on the southern slope of Bussey Hill where, although it is a pathetic object, it is kept to show the planters of this tree what they may expect of it long before it attains half its natural size. For many years there have been growing in the Arboretum what have been considered the finest specimens in cultivation of the second of the Colorado Spruces, *P. Engelmannii*; they formed narrow and compact pyramids with slender trunks furnished to the ground with short branches, and it was believed until recently that this tree which is so handsome on the high slopes of the Colorado mountains would prove to be the most desirable of all Spruce-trees for this climate. In the last two or three years, however, the lower branches of these trees have begun to die and, although the trees appear otherwise perfectly healthy and are still growing rapidly, their beauty as specimen trees is much injured.

Exotic Conifers. The conifers of western and northern Europe are generally hardy here but often short-lived. The Firs, Spruces and Pines of Japan are nearly all hardy in this climate, and although we have had a much shorter experience with the Chinese conifers than with those from Japan there is every hope that many of them will prove hardy in this climate and that some of them may be valuable ornamental trees.

The Cedar of Lebanon. The Cedar of Lebanon (*Cedrus Libani*) in the Arboretum shows the importance of careful selection of the seeds from which to raise trees for any particular climate. One of the Fir trees of Asia minor, *Abies cilicica*, has been growing for many years in New England where it has proved to be one of the best of all conifers of its class to cultivate here as an ornamental tree. With this Fir the Cedar of Lebanon grows in Asia Minor on the Anti-Taurus, far north of the Lebanon Range in Palestine and in a much colder climate. As the Palestine Cedar is not hardy here in New England the Arboretum had seeds of this tree collected on the Anti-Taurus with the view of attempting to introduce a hardy race of Cedars into New England. The seeds were sown here in the spring of 1902 and a large number of plants were raised. They all proved perfectly hardy, not one having suffered from drought or cold. Some, however, have been lost in attempts at transplanting, for no other tree here has proved so difficult to move. The average height of all these young Cedars in the Arboretum is now about thirteen feet. The tallest is twenty-one feet high and there is another specimen twenty feet high. It is doubtful if any other conifer can be grown in New England from seed to the height of twenty-one feet in thirteen years.

Torreya nucifera. Of the genus *Torreya*, which is related to the Yews, there are four species found in Florida, California, Japan and China. The Japanese species *T. nucifera* is well established in the

Arboretum, and one of the trees produced a few of its green olive-like fruits this year. In Japan this *Torreya* is a magnificent tree sometimes ninety feet high with a massive trunk and a dense crown of dark green shining leaves. It should be better known in this climate where it is apparently one of the rarest of exotic trees. The best specimen, probably, in the United States is in the Hunnewell Pinetum at Wellesley in this state. The peculiarity of this tree is that it does not begin to grow until July. In spite, however, of its short growing season it makes long annual shoots and increases rapidly in height. There is a group of this tree among the Laurels at the base of Hemlock Hill; there is a plant of *Torreya californica* among the exotic conifers near the top of Hemlock Hill where it has been kept alive for several years by careful winter protection. As an ornamental tree it has no value in this climate.

Chinese Cotoneasters. Several of the Chinese Cotoneasters in the collection of Chinese plants on the southern slope of Bussey Hill will be objects of much beauty for several weeks, for many of them retain their fruit until winter and their leaves are only now beginning to take on their brilliant autumn colors. The most beautiful of them perhaps now is the red-fruited *Cotoneaster Dielsiana*. *C. divaricata*, another red-fruited species, will be more beautiful in ten days' time when the leaves will be bright scarlet. *C. horizontalis* and its variety *perpusilla* with their dark green leaves and small bright red fruits, will not lose their autumn beauty much before Christmas. These two plants with their prostrate stems spreading into broad, compact mats are well suited for the rock garden or to train against low walls.

Hawthorns. Many of the American Hawthorns have now dropped their leaves. Two conspicuous exceptions are *Crataegus nitida* and *C. cordata*. The leaves of these two trees are turning red and set off to advantage their small, bright red fruits. There are large specimens of the former in the old Crataegus Collection on the bank between the Shrub Collection and the Parkway, and *C. cordata* can be seen on the Overlook and on Hickory Path near Centre Street. If a selection of twelve of the handsomest American Hawthorns for New England gardens were to be made these two should be among them.

Pyrus ovoidea. In a few days the leaves of this Chinese Pear-tree will turn bright scarlet. The late autumn coloring of the leaves of this tree is not surpassed by that of any other plant in the Arboretum, and it is well worth a place in any garden for this alone. It is interesting, too, because the leaves of no other Pear-tree turn to brilliant colors, and because the yellow juicy fruit, unlike that of other pears, is smaller at the apex than at the base. There is a good specimen of this tree in the Pear Collection on the left hand side of Forest Hills Road near the Forest Hills entrance.

Stewartia pseudocamellia. This is a small Japanese tree with erect growing branches, which produces in summer small, pure white, cup-shaped flowers and at this season of the year is interesting and attractive on account of the dark bronze purple color of the ripening leaves. There is a specimen in the Shrub Collection and another on Azalea Path.

The Bulletins of 1915 will be discontinued with this issue.

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